

PRECURSOR RNA. It is appreciated that VGR3038 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3038 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[41611] VGR3038 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate VGAM precursor RNAs, VGAM1362 precursor RNA, VGAM1363 precursor RNA, VGAM1364 precursor RNA and VGAM1365 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR and VGAM4 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[41612] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1362

RNA, VGAM1363 RNA, VGAM1364 RNA and VGAM1365 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA and VGAM4 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[41613] VGAM1362 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1362 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1362 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1362 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[41614] VGAM1363 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1363 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1363 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1363 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[41615] VGAM1364 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1364 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1364 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1364 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[41616] VGAM1365 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1365 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1365 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1365 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[41617] It is appreciated that a function of VGR3038 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3038 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3038 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3038 gene: VGAM1362 host target protein, VGAM1363 host target protein, VGAM1364 host target protein and VGAM1365 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1362,

VGAM1363, VGAM1364 and VGAM1365

[41618] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3039(VGR3039) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[41619] VGR3039 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3039 gene was detected is described hereinabove with reference to Figs. 6–15.

[41620] VGR3039 gene encodes VGR3039 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[41621] VGR3039 precursor RNA folds spatially, forming VGR3039 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3039 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to

the fact that the nucleotide sequence of VGR3039 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[41622] VGR3039 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 6 separate VGAM precursor RNAs, VGAM1366 precursor RNA, VGAM1367 precursor RNA, VGAM1368 precursor RNA, VGAM1369 precursor RNA, VGAM1370 precursor RNA and VGAM1371 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR and VGAM6 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[41623] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1366 RNA, VGAM1367 RNA, VGAM1368 RNA, VGAM1369 RNA, VGAM1370 RNA and VGAM1371 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA,

VGAM3 RNA, VGAM4 RNA, VGAM5 RNA and VGAM6 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[41624] VGAM1366 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1366 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1366 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1366 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[41625] VGAM1367 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1367 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1367 host target RNA, herein

schematically represented by VGAM2 HOST TARGET RNA into VGAM1367 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[41626] VGAM1368 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1368 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1368 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1368 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[41627] VGAM1369 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1369 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby in-

hibiting translation of VGAM1369 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1369 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[41628] VGAM1370 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1370 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1370 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1370 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[41629] VGAM1371 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM1371 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1371 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM1371 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[41630] It is appreciated that a function of VGR3039 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3039 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3039 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3039 gene: VGAM1366 host target protein, VGAM1367 host target protein, VGAM1368 host target protein, VGAM1369 host target protein, VGAM1370 host target protein and VGAM1371 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to

VGAM1366, VGAM1367, VGAM1368, VGAM1369,
VGAM1370 and VGAM1371

[41631] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3040(VGR3040) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[41632] VGR3040 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3040 gene was detected is described hereinabove with reference to Figs. 6–15.

[41633] VGR3040 gene encodes VGR3040 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[41634] VGR3040 precursor RNA folds spatially, forming VGR3040 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3040 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art

as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3040 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[41635] VGR3040 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 6 separate VGAM precursor RNAs, VGAM1372 precursor RNA, VGAM1373 precursor RNA, VGAM1374 precursor RNA, VGAM1375 precursor RNA, VGAM1376 precursor RNA and VGAM1377 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR and VGAM6 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[41636] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1372 RNA, VGAM1373 RNA, VGAM1374 RNA, VGAM1375 RNA, VGAM1376 RNA and VGAM1377 RNA respectively, herein

schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA and VGAM6 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[41637] VGAM1372 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1372 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1372 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1372 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[41638] VGAM1373 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1373 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby in-

hibiting translation of VGAM1373 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1373 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[41639] VGAM1374 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1374 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1374 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1374 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[41640] VGAM1375 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1375 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1375 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1375 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[41641] VGAM1376 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1376 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1376 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1376 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[41642] VGAM1377 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM1377 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1377 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM1377 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[41643] It is appreciated that a function of VGR3040 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3040 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3040 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3040 gene: VGAM1372 host target protein, VGAM1373 host target protein, VGAM1374 host target protein, VGAM1375 host target protein, VGAM1376 host target protein and VGAM1377 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host tar-

get genes is elaborated hereinabove with reference to VGAM1372, VGAM1373, VGAM1374, VGAM1375, VGAM1376 and VGAM1377

[41644] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3041(VGR3041) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[41645] VGR3041 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3041 gene was detected is described hereinabove with reference to Figs. 6–15.

[41646] VGR3041 gene encodes VGR3041 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[41647] VGR3041 precursor RNA folds spatially, forming VGR3041 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3041 folded precursor RNA, herein designated VGR FOLDED PRECUR–

SOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3041 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[41648] VGR3041 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate VGAM precursor RNAs, VGAM1378 precursor RNA and VGAM1379 precursor RNA, herein schematically represented by VGAM1 PRECURSOR and VGAM2 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[41649] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1378 RNA and VGAM1379 RNA respectively, herein schematically represented by VGAM1 RNA and VGAM2 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[41650] VGAM1378 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1378 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1378 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1378 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[41651] VGAM1379 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1379 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1379 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1379 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of

Fig. 1.

[41652] It is appreciated that a function of VGR3041 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3041 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3041 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3041 gene: VGAM1378 host target protein and VGAM1379 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN and VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1378 and VGAM1379

[41653] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3042(VGR3042) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known

in the art.

[41654] VGR3042 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3042 gene was detected is described hereinabove with reference to Figs. 6–15.

[41655] VGR3042 gene encodes VGR3042 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[41656] VGR3042 precursor RNA folds spatially, forming VGR3042 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3042 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3042 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[41657] VGR3042 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM pre–

cursor RNAs, VGAM1380 precursor RNA, VGAM1381 precursor RNA, VGAM1382 precursor RNA, VGAM1383 precursor RNA, VGAM1384 precursor RNA, VGAM1385 precursor RNA, VGAM1386 precursor RNA and VGAM1387 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[41658] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1380 RNA, VGAM1381 RNA, VGAM1382 RNA, VGAM1383 RNA, VGAM1384 RNA, VGAM1385 RNA, VGAM1386 RNA and VGAM1387 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[41659] VGAM1380 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding

site located in an untranslated region of VGAM1380 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1380 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1380 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[41660] VGAM1381 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1381 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1381 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1381 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[41661] VGAM1382 RNA, herein schematically represented by

VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1382 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1382 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1382 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[41662] VGAM1383 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1383 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1383 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1383 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[41663] VGAM1384 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1384 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1384 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1384 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[41664] VGAM1385 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM1385 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1385 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM1385 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of

Fig. 1.

[41665] VGAM1386 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM1386 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1386 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM1386 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[41666] VGAM1387 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM1387 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1387 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM1387 host target protein, herein schematically

represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[41667] It is appreciated that a function of VGR3042 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3042 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3042 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3042 gene: VGAM1380 host target protein, VGAM1381 host target protein, VGAM1382 host target protein, VGAM1383 host target protein, VGAM1384 host target protein, VGAM1385 host target protein, VGAM1386 host target protein and VGAM1387 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1380, VGAM1381, VGAM1382, VGAM1383, VGAM1384, VGAM1385, VGAM1386 and VGAM1387

[41668] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3043(VGR3043) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[41669] VGR3043 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3043 gene was detected is described hereinabove with reference to Figs. 6–15.

[41670] VGR3043 gene encodes VGR3043 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[41671] VGR3043 precursor RNA folds spatially, forming VGR3043 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3043 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3043 precursor

sor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[41672] VGR3043 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate VGAM precursor RNAs, VGAM1388 precursor RNA, VGAM1389 precursor RNA and VGAM1390 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR and VGAM3 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[41673] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1388 RNA, VGAM1389 RNA and VGAM1390 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA and VGAM3 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[41674] VGAM1388 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding

site located in an untranslated region of VGAM1388 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1388 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1388 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[41675] VGAM1389 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1389 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1389 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1389 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[41676] VGAM1390 RNA, herein schematically represented by

VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1390 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1390 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1390 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[41677] It is appreciated that a function of VGR3043 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3043 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3043 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3043 gene: VGAM1388 host target protein, VGAM1389 host target protein and VGAM1390 host target protein, herein schematically rep-

resented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1388, VGAM1389 and VGAM1390

[41678] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3044(VGR3044) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[41679] VGR3044 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3044 gene was detected is described hereinabove with reference to Figs. 6–15.

[41680] VGR3044 gene encodes VGR3044 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[41681] VGR3044 precursor RNA folds spatially, forming VGR3044 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3044 folded

precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3044 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[41682] VGR3044 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate VGAM precursor RNAs, VGAM1391 precursor RNA, VGAM1392 precursor RNA, VGAM1393 precursor RNA and VGAM1394 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR and VGAM4 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[41683] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1391 RNA, VGAM1392 RNA, VGAM1393 RNA and VGAM1394

RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA and VGAM4 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[41684] VGAM1391 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1391 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1391 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1391 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[41685] VGAM1392 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1392 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby in-

hibiting translation of VGAM1392 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1392 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[41686] VGAM1393 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1393 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1393 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1393 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[41687] VGAM1394 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1394 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1394 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1394 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[41688] It is appreciated that a function of VGR3044 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3044 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3044 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3044 gene: VGAM1391 host target protein, VGAM1392 host target protein, VGAM1393 host target protein and VGAM1394 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1391, VGAM1392, VGAM1393 and VGAM1394

[41689] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3045(VGR3045) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[41690] VGR3045 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3045 gene was detected is described hereinabove with reference to Figs. 6–15.

[41691] VGR3045 gene encodes VGR3045 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[41692] VGR3045 precursor RNA folds spatially, forming VGR3045 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3045 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3045 precu-

sor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[41693] VGR3045 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate VGAM precursor RNAs, VGAM1395 precursor RNA, VGAM1396 precursor RNA and VGAM1397 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR and VGAM3 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[41694] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1395 RNA, VGAM1396 RNA and VGAM1397 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA and VGAM3 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[41695] VGAM1395 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding

site located in an untranslated region of VGAM1395 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1395 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1395 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[41696] VGAM1396 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1396 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1396 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1396 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[41697] VGAM1397 RNA, herein schematically represented by

VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1397 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1397 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1397 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[41698] It is appreciated that a function of VGR3045 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3045 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3045 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3045 gene: VGAM1395 host target protein, VGAM1396 host target protein and VGAM1397 host target protein, herein schematically rep-

resented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1395, VGAM1396 and VGAM1397

[41699] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3046(VGR3046) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[41700] VGR3046 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3046 gene was detected is described hereinabove with reference to Figs. 6–15.

[41701] VGR3046 gene encodes VGR3046 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[41702] VGR3046 precursor RNA folds spatially, forming VGR3046 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3046 folded

precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3046 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[41703] VGR3046 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 7 separate VGAM precursor RNAs, VGAM1398 precursor RNA, VGAM1399 precursor RNA, VGAM1400 precursor RNA, VGAM1401 precursor RNA, VGAM1402 precursor RNA, VGAM1403 precursor RNA and VGAM1404 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR and VGAM7 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[41704] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA

segments of about 22 nucleotides in length, VGAM1398 RNA, VGAM1399 RNA, VGAM1400 RNA, VGAM1401 RNA, VGAM1402 RNA, VGAM1403 RNA and VGAM1404 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA and VGAM7 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[41705] VGAM1398 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1398 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1398 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1398 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[41706] VGAM1399 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1399 host target RNA, herein schematically represented by VGAM2

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1399 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1399 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[41707] VGAM1400 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1400 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1400 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1400 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[41708] VGAM1401 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1401 host

target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1401 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1401 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[41709] VGAM1402 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1402 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1402 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1402 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[41710] VGAM1403 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding

site located in an untranslated region of VGAM1403 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1403 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM1403 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[41711] VGAM1404 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM1404 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1404 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM1404 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[41712] It is appreciated that a function of VGR3046 gene, herein

designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3046 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3046 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3046 gene: VGAM1398 host target protein, VGAM1399 host target protein, VGAM1400 host target protein, VGAM1401 host target protein, VGAM1402 host target protein, VGAM1403 host target protein and VGAM1404 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1398, VGAM1399, VGAM1400, VGAM1401, VGAM1402, VGAM1403 and VGAM1404

[41713] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3047(VGR3047) viral gene, which encodes an operon-like cluster of novel viral

micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[41714] VGR3047 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3047 gene was detected is described hereinabove with reference to Figs. 6–15.

[41715] VGR3047 gene encodes VGR3047 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[41716] VGR3047 precursor RNA folds spatially, forming VGR3047 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3047 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3047 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[41717] VGR3047 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate VGAM precursor RNAs, VGAM1405 precursor RNA and VGAM1406 precursor RNA, herein schematically represented by VGAM1 PRECURSOR and VGAM2 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[41718] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1405 RNA and VGAM1406 RNA respectively, herein schematically represented by VGAM1 RNA and VGAM2 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[41719] VGAM1405 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1405 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby in-

hibiting translation of VGAM1405 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1405 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[41720] VGAM1406 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1406 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1406 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1406 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[41721] It is appreciated that a function of VGR3047 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3047 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3047

gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3047 gene: VGAM1405 host target protein and VGAM1406 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN and VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1405 and VGAM1406

[41722] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3048(VGR3048) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[41723] VGR3048 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3048 gene was detected is described hereinabove with reference to Figs. 6-15.

[41724] VGR3048 gene encodes VGR3048 precursor RNA, herein

designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[41725] VGR3048 precursor RNA folds spatially, forming VGR3048 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3048 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3048 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[41726] VGR3048 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 5 separate VGAM precursor RNAs, VGAM1407 precursor RNA, VGAM1408 precursor RNA, VGAM1409 precursor RNA, VGAM1410 precursor RNA and VGAM1411 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR and VGAM5 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment,

corresponding to VGAM PRECURSOR RNA of Fig. 8.

[41727] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1407 RNA, VGAM1408 RNA, VGAM1409 RNA, VGAM1410 RNA and VGAM1411 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA and VGAM5 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[41728] VGAM1407 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1407 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1407 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1407 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[41729] VGAM1408 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding

site located in an untranslated region of VGAM1408 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1408 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1408 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[41730] VGAM1409 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1409 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1409 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1409 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[41731] VGAM1410 RNA, herein schematically represented by

VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1410 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1410 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1410 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[41732] VGAM1411 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1411 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1411 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1411 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[41733] It is appreciated that a function of VGR3048 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3048 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3048 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3048 gene: VGAM1407 host target protein, VGAM1408 host target protein, VGAM1409 host target protein, VGAM1410 host target protein and VGAM1411 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1407, VGAM1408, VGAM1409, VGAM1410 and VGAM1411

[41734] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3049(VGR3049) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates

expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[41735] VGR3049 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3049 gene was detected is described hereinabove with reference to Figs. 6–15.

[41736] VGR3049 gene encodes VGR3049 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[41737] VGR3049 precursor RNA folds spatially, forming VGR3049 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3049 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3049 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[41738] VGR3049 folded precursor RNA, herein designated VGR

FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate VGAM precursor RNAs, VGAM1412 precursor RNA, VGAM1413 precursor RNA, VGAM1414 precursor RNA and VGAM1415 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR and VGAM4 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[41739] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1412 RNA, VGAM1413 RNA, VGAM1414 RNA and VGAM1415 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA and VGAM4 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[41740] VGAM1412 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1412 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1412 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1412 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[41741] VGAM1413 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1413 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1413 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1413 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[41742] VGAM1414 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1414 host target RNA, herein schematically represented by VGAM3

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1414 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1414 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[41743] VGAM1415 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1415 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1415 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1415 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[41744] It is appreciated that a function of VGR3049 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attack–

ing a host. Accordingly, utilities of VGR3049 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3049 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3049 gene: VGAM1412 host target protein, VGAM1413 host target protein, VGAM1414 host target protein and VGAM1415 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1412, VGAM1413, VGAM1414 and VGAM1415

[41745] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3050(VGR3050) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[41746] VGR3050 gene, herein designated VGR GENE, is a novel

bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3050 gene was detected is described hereinabove with reference to Figs. 6–15.

[41747] VGR3050 gene encodes VGR3050 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[41748] VGR3050 precursor RNA folds spatially, forming VGR3050 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3050 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3050 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[41749] VGR3050 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate VGAM precursor RNAs, VGAM1416 precursor RNA, VGAM1417 precursor RNA, VGAM1418 precursor RNA and VGAM1419

precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR and VGAM4 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[41750] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1416 RNA, VGAM1417 RNA, VGAM1418 RNA and VGAM1419 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA and VGAM4 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[41751] VGAM1416 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1416 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1416 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA

into VGAM1416 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[41752] VGAM1417 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1417 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1417 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1417 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[41753] VGAM1418 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1418 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1418 host target RNA, herein

schematically represented by VGAM3 HOST TARGET RNA into VGAM1418 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[41754] VGAM1419 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1419 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1419 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1419 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[41755] It is appreciated that a function of VGR3050 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3050 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3050 gene, herein designated VGR GENE, correlate with, and

may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3050 gene: VGAM1416 host target protein, VGAM1417 host target protein, VGAM1418 host target protein and VGAM1419 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1416, VGAM1417, VGAM1418 and VGAM1419

[41756] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3051(VGR3051) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[41757] VGR3051 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3051 gene was detected is described hereinabove with reference to Figs. 6-15.

[41758] VGR3051 gene encodes VGR3051 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[41759] VGR3051 precursor RNA folds spatially, forming VGR3051 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3051 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3051 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[41760] VGR3051 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate VGAM precursor RNAs, VGAM1420 precursor RNA, VGAM1421 precursor RNA, VGAM1422 precursor RNA and VGAM1423 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR and VGAM4 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA

segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[41761] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1420 RNA, VGAM1421 RNA, VGAM1422 RNA and VGAM1423 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA and VGAM4 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[41762] VGAM1420 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1420 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1420 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1420 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[41763] VGAM1421 RNA, herein schematically represented by

VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1421 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1421 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1421 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[41764] VGAM1422 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1422 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1422 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1422 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[41765] VGAM1423 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1423 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1423 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1423 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[41766] It is appreciated that a function of VGR3051 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3051 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3051 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3051 gene: VGAM1420 host target protein, VGAM1421 host target protein,

VGAM1422 host target protein and VGAM1423 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1420, VGAM1421, VGAM1422 and VGAM1423

[41767] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3052(VGR3052) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[41768] VGR3052 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3052 gene was detected is described hereinabove with reference to Figs. 6–15.

[41769] VGR3052 gene encodes VGR3052 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[41770] VGR3052 precursor RNA folds spatially, forming VGR3052

folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3052 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3052 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[41771] VGR3052 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 7 separate VGAM precursor RNAs, VGAM1424 precursor RNA, VGAM1425 precursor RNA, VGAM1426 precursor RNA, VGAM1427 precursor RNA, VGAM1428 precursor RNA, VGAM1429 precursor RNA and VGAM1430 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR and VGAM7 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[41772] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1424 RNA, VGAM1425 RNA, VGAM1426 RNA, VGAM1427 RNA, VGAM1428 RNA, VGAM1429 RNA and VGAM1430 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA and VGAM7 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[41773] VGAM1424 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1424 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1424 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1424 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[41774] VGAM1425 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding

site located in an untranslated region of VGAM1425 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1425 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1425 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[41775] VGAM1426 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1426 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1426 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1426 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[41776] VGAM1427 RNA, herein schematically represented by

VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1427 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1427 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1427 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[41777] VGAM1428 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1428 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1428 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1428 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[41778] VGAM1429 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM1429 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1429 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM1429 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[41779] VGAM1430 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM1430 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1430 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM1430 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of

Fig. 1.

[41780] It is appreciated that a function of VGR3052 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3052 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3052 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3052 gene: VGAM1424 host target protein, VGAM1425 host target protein, VGAM1426 host target protein, VGAM1427 host target protein, VGAM1428 host target protein, VGAM1429 host target protein and VGAM1430 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1424, VGAM1425, VGAM1426, VGAM1427, VGAM1428, VGAM1429 and VGAM1430

[41781] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred

to here as Viral Genomic Record 3053(VGR3053) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[41782] VGR3053 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3053 gene was detected is described hereinabove with reference to Figs. 6-15.

[41783] VGR3053 gene encodes VGR3053 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[41784] VGR3053 precursor RNA folds spatially, forming VGR3053 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3053 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3053 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which

is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[41785] VGR3053 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 7 separate VGAM precursor RNAs, VGAM1431 precursor RNA, VGAM1432 precursor RNA, VGAM1433 precursor RNA, VGAM1434 precursor RNA, VGAM1435 precursor RNA, VGAM1436 precursor RNA and VGAM1437 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR and VGAM7 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[41786] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1431 RNA, VGAM1432 RNA, VGAM1433 RNA, VGAM1434 RNA, VGAM1435 RNA, VGAM1436 RNA and VGAM1437 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA and VGAM7 RNA respectively, each of

which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[41787] VGAM1431 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1431 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1431 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1431 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[41788] VGAM1432 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1432 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1432 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1432 host target protein, herein schematically

represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[41789] VGAM1433 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1433 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1433 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1433 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[41790] VGAM1434 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1434 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1434 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA

into VGAM1434 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[41791] VGAM1435 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1435 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1435 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1435 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[41792] VGAM1436 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM1436 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1436 host target RNA, herein

schematically represented by VGAM6 HOST TARGET RNA into VGAM1436 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[41793] VGAM1437 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM1437 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1437 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM1437 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[41794] It is appreciated that a function of VGR3053 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3053 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3053 gene, herein designated VGR GENE, correlate with, and

may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3053 gene: VGAM1431 host target protein, VGAM1432 host target protein, VGAM1433 host target protein, VGAM1434 host target protein, VGAM1435 host target protein, VGAM1436 host target protein and VGAM1437 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1431, VGAM1432, VGAM1433, VGAM1434, VGAM1435, VGAM1436 and VGAM1437

[41795] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3054(VGR3054) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[41796] VGR3054 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding,

RNA viral gene. The method by which VGR3054 gene was detected is described hereinabove with reference to Figs. 6–15.

[41797] VGR3054 gene encodes VGR3054 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[41798] VGR3054 precursor RNA folds spatially, forming VGR3054 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3054 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3054 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[41799] VGR3054 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 5 separate VGAM precursor RNAs, VGAM1438 precursor RNA, VGAM1439 precursor RNA, VGAM1440 precursor RNA, VGAM1441 precursor RNA and VGAM1442 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR and VGAM5 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[41800] The above mentioned VGAM precursor RNAs are diced by

DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1438 RNA, VGAM1439 RNA, VGAM1440 RNA, VGAM1441 RNA and VGAM1442 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA and VGAM5 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[41801] VGAM1438 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1438 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1438 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1438 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[41802] VGAM1439 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1439 host target RNA, herein schematically represented by VGAM2

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1439 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1439 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[41803] VGAM1440 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1440 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1440 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1440 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[41804] VGAM1441 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1441 host

target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1441 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1441 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[41805] VGAM1442 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1442 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1442 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1442 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[41806] It is appreciated that a function of VGR3054 gene, herein designated VGR GENE, is inhibition of expression of host

target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3054 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3054 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3054 gene: VGAM1438 host target protein, VGAM1439 host target protein, VGAM1440 host target protein, VGAM1441 host target protein and VGAM1442 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1438, VGAM1439, VGAM1440, VGAM1441 and VGAM1442

[41807] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3055(VGR3055) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known

in the art.

[41808] VGR3055 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3055 gene was detected is described hereinabove with reference to Figs. 6–15.

[41809] VGR3055 gene encodes VGR3055 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[41810] VGR3055 precursor RNA folds spatially, forming VGR3055 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3055 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3055 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[41811] VGR3055 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 6 separate VGAM pre–

cursor RNAs, VGAM1443 precursor RNA, VGAM1444 precursor RNA, VGAM1445 precursor RNA, VGAM1446 precursor RNA, VGAM1447 precursor RNA and VGAM1448 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR and VGAM6 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[41812] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1443 RNA, VGAM1444 RNA, VGAM1445 RNA, VGAM1446 RNA, VGAM1447 RNA and VGAM1448 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA and VGAM6 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[41813] VGAM1443 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1443 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1443 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1443 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[41814] VGAM1444 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1444 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1444 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1444 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[41815] VGAM1445 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1445 host target RNA, herein schematically represented by VGAM3

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1445 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1445 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[41816] VGAM1446 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1446 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1446 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1446 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[41817] VGAM1447 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1447 host

target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1447 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1447 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[41818] VGAM1448 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM1448 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1448 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM1448 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[41819] It is appreciated that a function of VGR3055 gene, herein designated VGR GENE, is inhibition of expression of host

target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3055 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3055 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3055 gene: VGAM1443 host target protein, VGAM1444 host target protein, VGAM1445 host target protein, VGAM1446 host target protein, VGAM1447 host target protein and VGAM1448 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1443, VGAM1444, VGAM1445, VGAM1446, VGAM1447 and VGAM1448

[41820] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3056(VGR3056) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function

and utility of which at least one host target gene is known in the art.

[41821] VGR3056 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3056 gene was detected is described hereinabove with reference to Figs. 6–15.

[41822] VGR3056 gene encodes VGR3056 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[41823] VGR3056 precursor RNA folds spatially, forming VGR3056 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3056 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3056 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[41824] VGR3056 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellu–

lar enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM1449 precursor RNA, VGAM1450 precursor RNA, VGAM1451 precursor RNA, VGAM1452 precursor RNA, VGAM1453 precursor RNA, VGAM1454 precursor RNA, VGAM1455 precursor RNA and VGAM1456 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[41825] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1449 RNA, VGAM1450 RNA, VGAM1451 RNA, VGAM1452 RNA, VGAM1453 RNA, VGAM1454 RNA, VGAM1455 RNA and VGAM1456 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[41826] VGAM1449 RNA, herein schematically represented by

VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1449 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1449 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1449 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[41827] VGAM1450 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1450 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1450 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1450 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[41828] VGAM1451 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1451 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1451 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1451 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[41829] VGAM1452 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1452 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1452 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1452 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of

Fig. 1.

[41830] VGAM1453 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1453 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1453 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1453 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[41831] VGAM1454 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM1454 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1454 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM1454 host target protein, herein schematically

represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[41832] VGAM1455 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM1455 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1455 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM1455 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[41833] VGAM1456 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM1456 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1456 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA

into VGAM1456 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[41834] It is appreciated that a function of VGR3056 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3056 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3056 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3056 gene: VGAM1449 host target protein, VGAM1450 host target protein, VGAM1451 host target protein, VGAM1452 host target protein, VGAM1453 host target protein, VGAM1454 host target protein, VGAM1455 host target protein and VGAM1456 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1449, VGAM1450, VGAM1451, VGAM1452, VGAM1453, VGAM1454, VGAM1455 and

VGAM1456

[41835] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3057(VGR3057) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[41836] VGR3057 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3057 gene was detected is described hereinabove with reference to Figs. 6–15.

[41837] VGR3057 gene encodes VGR3057 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[41838] VGR3057 precursor RNA folds spatially, forming VGR3057 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3057 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to

the fact that the nucleotide sequence of VGR3057 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[41839] VGR3057 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM1457 precursor RNA, VGAM1458 precursor RNA, VGAM1459 precursor RNA, VGAM1460 precursor RNA, VGAM1461 precursor RNA, VGAM1462 precursor RNA, VGAM1463 precursor RNA and VGAM1464 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[41840] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1457 RNA, VGAM1458 RNA, VGAM1459 RNA, VGAM1460 RNA,

VGAM1461 RNA, VGAM1462 RNA, VGAM1463 RNA and VGAM1464 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[41841] VGAM1457 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1457 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1457 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1457 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[41842] VGAM1458 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1458 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1458 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1458 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[41843] VGAM1459 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1459 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1459 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1459 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[41844] VGAM1460 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1460 host target RNA, herein schematically represented by VGAM4

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1460 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1460 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[41845] VGAM1461 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1461 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1461 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1461 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[41846] VGAM1462 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM1462 host

target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1462 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM1462 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[41847] VGAM1463 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM1463 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1463 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM1463 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[41848] VGAM1464 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding

site located in an untranslated region of VGAM1464 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1464 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM1464 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[41849] It is appreciated that a function of VGR3057 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3057 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3057 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3057 gene: VGAM1457 host target protein, VGAM1458 host target protein, VGAM1459 host target protein, VGAM1460 host target protein, VGAM1461 host target protein, VGAM1462 host

target protein, VGAM1463 host target protein and VGAM1464 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1457, VGAM1458, VGAM1459, VGAM1460, VGAM1461, VGAM1462, VGAM1463 and VGAM1464

[41850] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3058(VGR3058) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[41851] VGR3058 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3058 gene was detected is described hereinabove with reference to Figs. 6–15.

[41852] VGR3058 gene encodes VGR3058 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typi-

cally several hundred nucleotides long.

[41853] VGR3058 precursor RNA folds spatially, forming VGR3058 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3058 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3058 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[41854] VGR3058 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate VGAM precursor RNAs, VGAM1465 precursor RNA, VGAM1466 precursor RNA and VGAM1467 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR and VGAM3 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[41855] The above mentioned VGAM precursor RNAs are diced by

DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1465 RNA, VGAM1466 RNA and VGAM1467 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA and VGAM3 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[41856] VGAM1465 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1465 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1465 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1465 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[41857] VGAM1466 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1466 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1466 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1466 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[41858] VGAM1467 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1467 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1467 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1467 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[41859] It is appreciated that a function of VGR3058 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3058 gene include

diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3058 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3058 gene: VGAM1465 host target protein, VGAM1466 host target protein and VGAM1467 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1465, VGAM1466 and VGAM1467

[41860] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3059(VGR3059) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[41861] VGR3059 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3059 gene was

detected is described hereinabove with reference to Figs. 6–15.

[41862] VGR3059 gene encodes VGR3059 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[41863] VGR3059 precursor RNA folds spatially, forming VGR3059 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3059 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3059 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[41864] VGR3059 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate VGAM precursor RNAs, VGAM1468 precursor RNA and VGAM1469 precursor RNA, herein schematically represented by VGAM1 PRECURSOR and VGAM2 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin

shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[41865] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1468 RNA and VGAM1469 RNA respectively, herein schematically represented by VGAM1 RNA and VGAM2 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[41866] VGAM1468 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1468 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1468 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1468 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[41867] VGAM1469 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding

site located in an untranslated region of VGAM1469 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1469 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1469 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[41868] It is appreciated that a function of VGR3059 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3059 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3059 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3059 gene: VGAM1468 host target protein and VGAM1469 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN and VGAM HOST TARGET PROTEIN respectively.

The function of these host target genes is elaborated hereinabove with reference to VGAM1468 and VGAM1469

[41869] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3060(VGR3060) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[41870] VGR3060 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3060 gene was detected is described hereinabove with reference to Figs. 6-15.

[41871] VGR3060 gene encodes VGR3060 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[41872] VGR3060 precursor RNA folds spatially, forming VGR3060 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3060 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art

as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3060 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[41873] VGR3060 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM1470 precursor RNA, VGAM1471 precursor RNA, VGAM1472 precursor RNA, VGAM1473 precursor RNA, VGAM1474 precursor RNA, VGAM1475 precursor RNA, VGAM1476 precursor RNA and VGAM1477 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[41874] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1470

RNA, VGAM1471 RNA, VGAM1472 RNA, VGAM1473 RNA, VGAM1474 RNA, VGAM1475 RNA, VGAM1476 RNA and VGAM1477 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[41875] VGAM1470 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1470 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1470 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1470 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[41876] VGAM1471 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1471 host target RNA, herein schematically represented by VGAM2

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1471 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1471 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[41877] VGAM1472 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1472 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1472 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1472 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[41878] VGAM1473 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1473 host

target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1473 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1473 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[41879] VGAM1474 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1474 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1474 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1474 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[41880] VGAM1475 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding

site located in an untranslated region of VGAM1475 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1475 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM1475 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[41881] VGAM1476 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM1476 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1476 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM1476 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[41882] VGAM1477 RNA, herein schematically represented by

VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM1477 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1477 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM1477 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[41883] It is appreciated that a function of VGR3060 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3060 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3060 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3060 gene: VGAM1470 host target protein, VGAM1471 host target protein, VGAM1472 host target protein, VGAM1473 host target

protein, VGAM1474 host target protein, VGAM1475 host target protein, VGAM1476 host target protein and VGAM1477 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1470, VGAM1471, VGAM1472, VGAM1473, VGAM1474, VGAM1475, VGAM1476 and VGAM1477

[41884] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3061(VGR3061) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[41885] VGR3061 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3061 gene was detected is described hereinabove with reference to Figs. 6-15.

[41886] VGR3061 gene encodes VGR3061 precursor RNA, herein

designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[41887] VGR3061 precursor RNA folds spatially, forming VGR3061 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3061 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3061 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[41888] VGR3061 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 6 separate VGAM precursor RNAs, VGAM1478 precursor RNA, VGAM1479 precursor RNA, VGAM1480 precursor RNA, VGAM1481 precursor RNA, VGAM1482 precursor RNA and VGAM1483 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR and VGAM6 PRECURSOR respectively, each of which VGAM

precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[41889] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1478 RNA, VGAM1479 RNA, VGAM1480 RNA, VGAM1481 RNA, VGAM1482 RNA and VGAM1483 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA and VGAM6 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[41890] VGAM1478 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1478 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1478 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1478 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[41891] VGAM1479 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1479 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1479 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1479 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[41892] VGAM1480 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1480 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1480 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1480 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of

Fig. 1.

[41893] VGAM1481 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1481 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1481 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1481 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[41894] VGAM1482 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1482 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1482 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1482 host target protein, herein schematically

represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[41895] VGAM1483 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM1483 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1483 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM1483 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[41896] It is appreciated that a function of VGR3061 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3061 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3061 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in

the operon-like cluster of VGR3061 gene: VGAM1478 host target protein, VGAM1479 host target protein, VGAM1480 host target protein, VGAM1481 host target protein, VGAM1482 host target protein and VGAM1483 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1478, VGAM1479, VGAM1480, VGAM1481, VGAM1482 and VGAM1483

[41897] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3062(VGR3062) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[41898] VGR3062 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3062 gene was detected is described hereinabove with reference to Figs. 6-15.

- [41899] VGR3062 gene encodes VGR3062 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.
- [41900] VGR3062 precursor RNA folds spatially, forming VGR3062 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3062 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3062 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.
- [41901] VGR3062 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate VGAM precursor RNAs, VGAM1484 precursor RNA, VGAM1485 precursor RNA, VGAM1486 precursor RNA and VGAM1487 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR and VGAM4 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA

segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[41902] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1484 RNA, VGAM1485 RNA, VGAM1486 RNA and VGAM1487 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA and VGAM4 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[41903] VGAM1484 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1484 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1484 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1484 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[41904] VGAM1485 RNA, herein schematically represented by

VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1485 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1485 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1485 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[41905] VGAM1486 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1486 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1486 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1486 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[41906] VGAM1487 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1487 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1487 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1487 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[41907] It is appreciated that a function of VGR3062 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3062 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3062 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3062 gene: VGAM1484 host target protein, VGAM1485 host target protein,

VGAM1486 host target protein and VGAM1487 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1484, VGAM1485, VGAM1486 and VGAM1487

[41908] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3063(VGR3063) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[41909] VGR3063 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3063 gene was detected is described hereinabove with reference to Figs. 6–15.

[41910] VGR3063 gene encodes VGR3063 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[41911] VGR3063 precursor RNA folds spatially, forming VGR3063

folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3063 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3063 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[41912] VGR3063 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate VGAM precursor RNAs, VGAM1488 precursor RNA, VGAM1489 precursor RNA, VGAM1490 precursor RNA and VGAM1491 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR and VGAM4 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[41913] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA

segments of about 22 nucleotides in length, VGAM1488 RNA, VGAM1489 RNA, VGAM1490 RNA and VGAM1491 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA and VGAM4 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[41914] VGAM1488 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1488 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1488 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1488 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[41915] VGAM1489 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1489 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1489 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1489 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[41916] VGAM1490 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1490 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1490 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1490 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[41917] VGAM1491 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1491 host target RNA, herein schematically represented by VGAM4

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1491 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1491 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[41918] It is appreciated that a function of VGR3063 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3063 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3063 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3063 gene: VGAM1488 host target protein, VGAM1489 host target protein, VGAM1490 host target protein and VGAM1491 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is

elaborated hereinabove with reference to VGAM1488, VGAM1489, VGAM1490 and VGAM1491

[41919] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3064(VGR3064) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[41920] VGR3064 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3064 gene was detected is described hereinabove with reference to Figs. 6-15.

[41921] VGR3064 gene encodes VGR3064 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[41922] VGR3064 precursor RNA folds spatially, forming VGR3064 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3064 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art

as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3064 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[41923] VGR3064 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate VGAM precursor RNAs, VGAM1492 precursor RNA, VGAM1493 precursor RNA, VGAM1494 precursor RNA and VGAM1495 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR and VGAM4 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[41924] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1492 RNA, VGAM1493 RNA, VGAM1494 RNA and VGAM1495 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA and VGAM4 RNA

respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[41925] VGAM1492 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1492 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1492 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1492 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[41926] VGAM1493 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1493 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1493 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA

into VGAM1493 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[41927] VGAM1494 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1494 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1494 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1494 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[41928] VGAM1495 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1495 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1495 host target RNA, herein

schematically represented by VGAM4 HOST TARGET RNA into VGAM1495 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[41929] It is appreciated that a function of VGR3064 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3064 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3064 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3064 gene: VGAM1492 host target protein, VGAM1493 host target protein, VGAM1494 host target protein and VGAM1495 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1492, VGAM1493, VGAM1494 and VGAM1495

[41930] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred

to here as Viral Genomic Record 3065(VGR3065) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[41931] VGR3065 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3065 gene was detected is described hereinabove with reference to Figs. 6–15.

[41932] VGR3065 gene encodes VGR3065 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[41933] VGR3065 precursor RNA folds spatially, forming VGR3065 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3065 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3065 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which

is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[41934] VGR3065 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate VGAM precursor RNAs, VGAM1496 precursor RNA, VGAM1497 precursor RNA, VGAM1498 precursor RNA and VGAM1499 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR and VGAM4 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[41935] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1496 RNA, VGAM1497 RNA, VGAM1498 RNA and VGAM1499 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA and VGAM4 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[41936] VGAM1496 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding

site located in an untranslated region of VGAM1496 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1496 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1496 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[41937] VGAM1497 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1497 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1497 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1497 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[41938] VGAM1498 RNA, herein schematically represented by

VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1498 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1498 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1498 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[41939] VGAM1499 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1499 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1499 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1499 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[41940] It is appreciated that a function of VGR3065 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3065 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3065 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3065 gene: VGAM1496 host target protein, VGAM1497 host target protein, VGAM1498 host target protein and VGAM1499 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1496, VGAM1497, VGAM1498 and VGAM1499

[41941] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3066(VGR3066) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function

and utility of which at least one host target gene is known in the art.

[41942] VGR3066 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3066 gene was detected is described hereinabove with reference to Figs. 6–15.

[41943] VGR3066 gene encodes VGR3066 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[41944] VGR3066 precursor RNA folds spatially, forming VGR3066 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3066 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3066 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[41945] VGR3066 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellu–

lar enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM1500 precursor RNA, VGAM1501 precursor RNA, VGAM1502 precursor RNA, VGAM1503 precursor RNA, VGAM1504 precursor RNA, VGAM1505 precursor RNA, VGAM1506 precursor RNA and VGAM1507 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[41946] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1500 RNA, VGAM1501 RNA, VGAM1502 RNA, VGAM1503 RNA, VGAM1504 RNA, VGAM1505 RNA, VGAM1506 RNA and VGAM1507 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[41947] VGAM1500 RNA, herein schematically represented by

VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1500 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1500 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1500 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[41948] VGAM1501 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1501 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1501 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1501 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[41949] VGAM1502 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1502 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1502 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1502 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[41950] VGAM1503 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1503 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1503 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1503 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of

Fig. 1.

[41951] VGAM1504 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1504 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1504 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1504 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[41952] VGAM1505 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM1505 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1505 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM1505 host target protein, herein schematically

represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[41953] VGAM1506 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM1506 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1506 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM1506 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[41954] VGAM1507 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM1507 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1507 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA

into VGAM1507 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[41955] It is appreciated that a function of VGR3066 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3066 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3066 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3066 gene: VGAM1500 host target protein, VGAM1501 host target protein, VGAM1502 host target protein, VGAM1503 host target protein, VGAM1504 host target protein, VGAM1505 host target protein, VGAM1506 host target protein and VGAM1507 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1500, VGAM1501, VGAM1502, VGAM1503, VGAM1504, VGAM1505, VGAM1506 and

VGAM1507

[41956] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3067(VGR3067) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[41957] VGR3067 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3067 gene was detected is described hereinabove with reference to Figs. 6–15.

[41958] VGR3067 gene encodes VGR3067 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[41959] VGR3067 precursor RNA folds spatially, forming VGR3067 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3067 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to

the fact that the nucleotide sequence of VGR3067 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[41960] VGR3067 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate VGAM precursor RNAs, VGAM1508 precursor RNA, VGAM1509 precursor RNA, VGAM1510 precursor RNA and VGAM1511 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR and VGAM4 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[41961] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1508 RNA, VGAM1509 RNA, VGAM1510 RNA and VGAM1511 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA and VGAM4 RNA respectively, each of which VGAM RNAs corresponding to

VGAM RNA of Fig. 8.

[41962] VGAM1508 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1508 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1508 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1508 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[41963] VGAM1509 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1509 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1509 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1509 host target protein, herein schematically

represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[41964] VGAM1510 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1510 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1510 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1510 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[41965] VGAM1511 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1511 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1511 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA

into VGAM1511 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[41966] It is appreciated that a function of VGR3067 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3067 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3067 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3067 gene: VGAM1508 host target protein, VGAM1509 host target protein, VGAM1510 host target protein and VGAM1511 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1508, VGAM1509, VGAM1510 and VGAM1511

[41967] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3068(VGR3068) viral

gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[41968] VGR3068 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3068 gene was detected is described hereinabove with reference to Figs. 6–15.

[41969] VGR3068 gene encodes VGR3068 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[41970] VGR3068 precursor RNA folds spatially, forming VGR3068 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3068 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3068 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the

second half thereof, as is well known in the art.

[41971] VGR3068 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 5 separate VGAM precursor RNAs, VGAM1512 precursor RNA, VGAM1513 precursor RNA, VGAM1514 precursor RNA, VGAM1515 precursor RNA and VGAM1516 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR and VGAM5 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[41972] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1512 RNA, VGAM1513 RNA, VGAM1514 RNA, VGAM1515 RNA and VGAM1516 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA and VGAM5 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[41973] VGAM1512 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1512 host

target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1512 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1512 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[41974] VGAM1513 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1513 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1513 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1513 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[41975] VGAM1514 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding

site located in an untranslated region of VGAM1514 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1514 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1514 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[41976] VGAM1515 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1515 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1515 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1515 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[41977] VGAM1516 RNA, herein schematically represented by

VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1516 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1516 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1516 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[41978] It is appreciated that a function of VGR3068 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3068 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3068 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3068 gene: VGAM1512 host target protein, VGAM1513 host target protein, VGAM1514 host target protein, VGAM1515 host target

protein and VGAM1516 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1512, VGAM1513, VGAM1514, VGAM1515 and VGAM1516

[41979] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3069(VGR3069) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[41980] VGR3069 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3069 gene was detected is described hereinabove with reference to Figs. 6-15.

[41981] VGR3069 gene encodes VGR3069 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[41982] VGR3069 precursor RNA folds spatially, forming VGR3069

folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3069 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3069 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[41983] VGR3069 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate VGAM precursor RNAs, VGAM1517 precursor RNA, VGAM1518 precursor RNA and VGAM1519 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR and VGAM3 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[41984] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1517

RNA, VGAM1518 RNA and VGAM1519 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA and VGAM3 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[41985] VGAM1517 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1517 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1517 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1517 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[41986] VGAM1518 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1518 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby in-

hibiting translation of VGAM1518 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1518 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[41987] VGAM1519 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1519 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1519 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1519 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[41988] It is appreciated that a function of VGR3069 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3069 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3069

gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3069 gene: VGAM1517 host target protein, VGAM1518 host target protein and VGAM1519 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1517, VGAM1518 and VGAM1519

[41989] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3070(VGR3070) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[41990] VGR3070 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3070 gene was detected is described hereinabove with reference to Figs. 6-15.

[41991] VGR3070 gene encodes VGR3070 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[41992] VGR3070 precursor RNA folds spatially, forming VGR3070 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3070 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3070 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[41993] VGR3070 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM1520 precursor RNA, VGAM1521 precursor RNA, VGAM1522 precursor RNA, VGAM1523 precursor RNA, VGAM1524 precursor RNA, VGAM1525 precursor RNA, VGAM1526 precursor RNA and VGAM1527 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRE-

CURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[41994] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1520 RNA, VGAM1521 RNA, VGAM1522 RNA, VGAM1523 RNA, VGAM1524 RNA, VGAM1525 RNA, VGAM1526 RNA and VGAM1527 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[41995] VGAM1520 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1520 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1520 host target RNA, herein

schematically represented by VGAM1 HOST TARGET RNA into VGAM1520 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[41996] VGAM1521 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1521 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1521 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1521 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[41997] VGAM1522 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1522 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby in-

hibiting translation of VGAM1522 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1522 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[41998] VGAM1523 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1523 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1523 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1523 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[41999] VGAM1524 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1524 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1524 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1524 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[42000] VGAM1525 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM1525 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1525 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM1525 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[42001] VGAM1526 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM1526 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1526 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM1526 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[42002] VGAM1527 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM1527 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1527 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM1527 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[42003] It is appreciated that a function of VGR3070 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3070 gene include

diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3070 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3070 gene: VGAM1520 host target protein, VGAM1521 host target protein, VGAM1522 host target protein, VGAM1523 host target protein, VGAM1524 host target protein, VGAM1525 host target protein, VGAM1526 host target protein and VGAM1527 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1520, VGAM1521, VGAM1522, VGAM1523, VGAM1524, VGAM1525, VGAM1526 and VGAM1527

[42004] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3071(VGR3071) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function

and utility of which at least one host target gene is known in the art.

[42005] VGR3071 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3071 gene was detected is described hereinabove with reference to Figs. 6–15.

[42006] VGR3071 gene encodes VGR3071 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42007] VGR3071 precursor RNA folds spatially, forming VGR3071 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3071 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3071 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[42008] VGR3071 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellu–

lar enzymatic activity into at least 4 separate VGAM precursor RNAs, VGAM1528 precursor RNA, VGAM1529 precursor RNA, VGAM1530 precursor RNA and VGAM1531 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR and VGAM4 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42009] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1528 RNA, VGAM1529 RNA, VGAM1530 RNA and VGAM1531 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA and VGAM4 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42010] VGAM1528 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1528 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1528 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1528 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42011] VGAM1529 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1529 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1529 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1529 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42012] VGAM1530 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1530 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1530 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1530 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42013] VGAM1531 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1531 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1531 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1531 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[42014] It is appreciated that a function of VGR3071 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3071 gene include

diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3071 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3071 gene: VGAM1528 host target protein, VGAM1529 host target protein, VGAM1530 host target protein and VGAM1531 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1528, VGAM1529, VGAM1530 and VGAM1531

[42015] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3072(VGR3072) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42016] VGR3072 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding,

RNA viral gene. The method by which VGR3072 gene was detected is described hereinabove with reference to Figs. 6–15.

[42017] VGR3072 gene encodes VGR3072 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42018] VGR3072 precursor RNA folds spatially, forming VGR3072 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3072 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3072 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[42019] VGR3072 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 6 separate VGAM precursor RNAs, VGAM1532 precursor RNA, VGAM1533 precursor RNA, VGAM1534 precursor RNA, VGAM1535 precursor RNA, VGAM1536 precursor RNA and VGAM1537

precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR and VGAM6 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42020] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1532 RNA, VGAM1533 RNA, VGAM1534 RNA, VGAM1535 RNA, VGAM1536 RNA and VGAM1537 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA and VGAM6 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42021] VGAM1532 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1532 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1532 host target RNA, herein

schematically represented by VGAM1 HOST TARGET RNA into VGAM1532 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42022] VGAM1533 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1533 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1533 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1533 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42023] VGAM1534 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1534 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby in-

hibiting translation of VGAM1534 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1534 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42024] VGAM1535 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1535 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1535 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1535 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[42025] VGAM1536 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1536 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1536 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1536 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[42026] VGAM1537 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM1537 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1537 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM1537 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[42027] It is appreciated that a function of VGR3072 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3072 gene include diagnosis, prevention and treatment of viral infection by .

Specific functions, and accordingly utilities, of VGR3072 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3072 gene: VGAM1532 host target protein, VGAM1533 host target protein, VGAM1534 host target protein, VGAM1535 host target protein, VGAM1536 host target protein and VGAM1537 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1532, VGAM1533, VGAM1534, VGAM1535, VGAM1536 and VGAM1537

[42028] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3073(VGR3073) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42029] VGR3073 gene, herein designated VGR GENE, is a novel

bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3073 gene was detected is described hereinabove with reference to Figs. 6–15.

[42030] VGR3073 gene encodes VGR3073 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42031] VGR3073 precursor RNA folds spatially, forming VGR3073 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3073 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3073 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[42032] VGR3073 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate VGAM precursor RNAs, VGAM1538 precursor RNA, VGAM1539 precursor RNA, VGAM1540 precursor RNA and VGAM1541

precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR and VGAM4 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42033] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1538 RNA, VGAM1539 RNA, VGAM1540 RNA and VGAM1541 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA and VGAM4 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42034] VGAM1538 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1538 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1538 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA

into VGAM1538 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42035] VGAM1539 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1539 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1539 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1539 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42036] VGAM1540 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1540 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1540 host target RNA, herein

schematically represented by VGAM3 HOST TARGET RNA into VGAM1540 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42037] VGAM1541 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1541 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1541 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1541 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[42038] It is appreciated that a function of VGR3073 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3073 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3073 gene, herein designated VGR GENE, correlate with, and

may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3073 gene: VGAM1538 host target protein, VGAM1539 host target protein, VGAM1540 host target protein and VGAM1541 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1538, VGAM1539, VGAM1540 and VGAM1541

[42039] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3074(VGR3074) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42040] VGR3074 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3074 gene was detected is described hereinabove with reference to Figs. 6-15.

[42041] VGR3074 gene encodes VGR3074 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42042] VGR3074 precursor RNA folds spatially, forming VGR3074 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3074 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3074 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[42043] VGR3074 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 6 separate VGAM precursor RNAs, VGAM1542 precursor RNA, VGAM1543 precursor RNA, VGAM1544 precursor RNA, VGAM1545 precursor RNA, VGAM1546 precursor RNA and VGAM1547 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR and

VGAM6 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42044] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1542 RNA, VGAM1543 RNA, VGAM1544 RNA, VGAM1545 RNA, VGAM1546 RNA and VGAM1547 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA and VGAM6 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42045] VGAM1542 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1542 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1542 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1542 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of

Fig. 1.

[42046] VGAM1543 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1543 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1543 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1543 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42047] VGAM1544 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1544 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1544 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1544 host target protein, herein schematically

represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42048] VGAM1545 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1545 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1545 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1545 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[42049] VGAM1546 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1546 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1546 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA

into VGAM1546 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[42050] VGAM1547 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM1547 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1547 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM1547 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[42051] It is appreciated that a function of VGR3074 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3074 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3074 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target

genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3074 gene: VGAM1542 host target protein, VGAM1543 host target protein, VGAM1544 host target protein, VGAM1545 host target protein, VGAM1546 host target protein and VGAM1547 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1542, VGAM1543, VGAM1544, VGAM1545, VGAM1546 and VGAM1547

[42052] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3075(VGR3075) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42053] VGR3075 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3075 gene was detected is described hereinabove with reference to Figs.

6-15.

[42054] VGR3075 gene encodes VGR3075 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42055] VGR3075 precursor RNA folds spatially, forming VGR3075 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3075 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3075 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[42056] VGR3075 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM1548 precursor RNA, VGAM1549 precursor RNA, VGAM1550 precursor RNA, VGAM1551 precursor RNA, VGAM1552 precursor RNA, VGAM1553 precursor RNA, VGAM1554 precursor RNA and VGAM1555 precursor RNA, herein schematically represented by

VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42057] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1548 RNA, VGAM1549 RNA, VGAM1550 RNA, VGAM1551 RNA, VGAM1552 RNA, VGAM1553 RNA, VGAM1554 RNA and VGAM1555 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42058] VGAM1548 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1548 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby in-

hibiting translation of VGAM1548 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1548 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42059] VGAM1549 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1549 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1549 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1549 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42060] VGAM1550 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1550 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1550 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1550 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42061] VGAM1551 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1551 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1551 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1551 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[42062] VGAM1552 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1552 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1552 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1552 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[42063] VGAM1553 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM1553 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1553 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM1553 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[42064] VGAM1554 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM1554 host target RNA, herein schematically represented by VGAM7

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1554 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM1554 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[42065] VGAM1555 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM1555 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1555 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM1555 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[42066] It is appreciated that a function of VGR3075 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attack–

ing a host. Accordingly, utilities of VGR3075 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3075 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3075 gene: VGAM1548 host target protein, VGAM1549 host target protein, VGAM1550 host target protein, VGAM1551 host target protein, VGAM1552 host target protein, VGAM1553 host target protein, VGAM1554 host target protein and VGAM1555 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1548, VGAM1549, VGAM1550, VGAM1551, VGAM1552, VGAM1553, VGAM1554 and VGAM1555

[42067] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3076(VGR3076) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates

expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42068] VGR3076 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3076 gene was detected is described hereinabove with reference to Figs. 6–15.

[42069] VGR3076 gene encodes VGR3076 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42070] VGR3076 precursor RNA folds spatially, forming VGR3076 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3076 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3076 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[42071] VGR3076 folded precursor RNA, herein designated VGR

FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate VGAM precursor RNAs, VGAM1556 precursor RNA and VGAM1557 precursor RNA, herein schematically represented by VGAM1 PRECURSOR and VGAM2 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42072] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1556 RNA and VGAM1557 RNA respectively, herein schematically represented by VGAM1 RNA and VGAM2 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42073] VGAM1556 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1556 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1556 host target RNA, herein

schematically represented by VGAM1 HOST TARGET RNA into VGAM1556 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42074] VGAM1557 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1557 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1557 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1557 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42075] It is appreciated that a function of VGR3076 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3076 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3076 gene, herein designated VGR GENE, correlate with, and

may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3076 gene: VGAM1556 host target protein and VGAM1557 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN and VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1556 and VGAM1557

[42076] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3077(VGR3077) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42077] VGR3077 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3077 gene was detected is described hereinabove with reference to Figs. 6–15.

[42078] VGR3077 gene encodes VGR3077 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typi-

cally several hundred nucleotides long.

[42079] VGR3077 precursor RNA folds spatially, forming VGR3077 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3077 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3077 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[42080] VGR3077 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 6 separate VGAM precursor RNAs, VGAM1558 precursor RNA, VGAM1559 precursor RNA, VGAM1560 precursor RNA, VGAM1561 precursor RNA, VGAM1562 precursor RNA and VGAM1563 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR and VGAM6 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment,

corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42081] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1558 RNA, VGAM1559 RNA, VGAM1560 RNA, VGAM1561 RNA, VGAM1562 RNA and VGAM1563 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA and VGAM6 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42082] VGAM1558 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1558 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1558 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1558 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42083] VGAM1559 RNA, herein schematically represented by

VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1559 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1559 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1559 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42084] VGAM1560 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1560 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1560 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1560 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42085] VGAM1561 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1561 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1561 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1561 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[42086] VGAM1562 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1562 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1562 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1562 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of

Fig. 1.

[42087] VGAM1563 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM1563 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1563 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM1563 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[42088] It is appreciated that a function of VGR3077 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3077 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3077 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3077 gene: VGAM1558

host target protein, VGAM1559 host target protein, VGAM1560 host target protein, VGAM1561 host target protein, VGAM1562 host target protein and VGAM1563 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1558, VGAM1559, VGAM1560, VGAM1561, VGAM1562 and VGAM1563

[42089] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3078(VGR3078) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42090] VGR3078 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3078 gene was detected is described hereinabove with reference to Figs. 6-15.

[42091] VGR3078 gene encodes VGR3078 precursor RNA, herein

designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42092] VGR3078 precursor RNA folds spatially, forming VGR3078 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3078 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3078 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[42093] VGR3078 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate VGAM precursor RNAs, VGAM1564 precursor RNA, VGAM1565 precursor RNA and VGAM1566 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR and VGAM3 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42094] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1564 RNA, VGAM1565 RNA and VGAM1566 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA and VGAM3 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42095] VGAM1564 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1564 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1564 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1564 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42096] VGAM1565 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1565 host target RNA, herein schematically represented by VGAM2

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1565 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1565 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42097] VGAM1566 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1566 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1566 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1566 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42098] It is appreciated that a function of VGR3078 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attack–

ing a host. Accordingly, utilities of VGR3078 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3078 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3078 gene: VGAM1564 host target protein, VGAM1565 host target protein and VGAM1566 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1564, VGAM1565 and VGAM1566

[42099] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3079(VGR3079) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42100] VGR3079 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding,

RNA viral gene. The method by which VGR3079 gene was detected is described hereinabove with reference to Figs. 6–15.

[42101] VGR3079 gene encodes VGR3079 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42102] VGR3079 precursor RNA folds spatially, forming VGR3079 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3079 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3079 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[42103] VGR3079 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate VGAM precursor RNAs, VGAM1567 precursor RNA, VGAM1568 precursor RNA, VGAM1569 precursor RNA and VGAM1570 precursor RNA, herein schematically represented by

VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR and VGAM4 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42104] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1567 RNA, VGAM1568 RNA, VGAM1569 RNA and VGAM1570 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA and VGAM4 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42105] VGAM1567 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1567 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1567 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1567 host target protein, herein schematically

represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42106] VGAM1568 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1568 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1568 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1568 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42107] VGAM1569 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1569 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1569 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA

into VGAM1569 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42108] VGAM1570 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1570 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1570 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1570 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[42109] It is appreciated that a function of VGR3079 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3079 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3079 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target

genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3079 gene: VGAM1567 host target protein, VGAM1568 host target protein, VGAM1569 host target protein and VGAM1570 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1567, VGAM1568, VGAM1569 and VGAM1570

[42110] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3080(VGR3080) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42111] VGR3080 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3080 gene was detected is described hereinabove with reference to Figs. 6-15.

[42112] VGR3080 gene encodes VGR3080 precursor RNA, herein

designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42113] VGR3080 precursor RNA folds spatially, forming VGR3080 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3080 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3080 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[42114] VGR3080 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM1571 precursor RNA, VGAM1572 precursor RNA, VGAM1573 precursor RNA, VGAM1574 precursor RNA, VGAM1575 precursor RNA, VGAM1576 precursor RNA, VGAM1577 precursor RNA and VGAM1578 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR,

VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42115] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1571 RNA, VGAM1572 RNA, VGAM1573 RNA, VGAM1574 RNA, VGAM1575 RNA, VGAM1576 RNA, VGAM1577 RNA and VGAM1578 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42116] VGAM1571 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1571 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1571 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA

into VGAM1571 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42117] VGAM1572 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1572 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1572 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1572 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42118] VGAM1573 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1573 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1573 host target RNA, herein

schematically represented by VGAM3 HOST TARGET RNA into VGAM1573 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42119] VGAM1574 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1574 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1574 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1574 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[42120] VGAM1575 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1575 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby in-

hibiting translation of VGAM1575 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1575 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[42121] VGAM1576 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM1576 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1576 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM1576 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[42122] VGAM1577 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM1577 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1577 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM1577 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[42123] VGAM1578 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM1578 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1578 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM1578 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[42124] It is appreciated that a function of VGR3080 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3080 gene include diagnosis, prevention and treatment of viral infection by .

Specific functions, and accordingly utilities, of VGR3080 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3080 gene: VGAM1571 host target protein, VGAM1572 host target protein, VGAM1573 host target protein, VGAM1574 host target protein, VGAM1575 host target protein, VGAM1576 host target protein, VGAM1577 host target protein and VGAM1578 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1571, VGAM1572, VGAM1573, VGAM1574, VGAM1575, VGAM1576, VGAM1577 and VGAM1578

[42125] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3081(VGR3081) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known

in the art.

[42126] VGR3081 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3081 gene was detected is described hereinabove with reference to Figs. 6–15.

[42127] VGR3081 gene encodes VGR3081 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42128] VGR3081 precursor RNA folds spatially, forming VGR3081 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3081 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3081 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[42129] VGR3081 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate VGAM pre–

cursor RNAs, VGAM1579 precursor RNA and VGAM1580 precursor RNA, herein schematically represented by VGAM1 PRECURSOR and VGAM2 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42130] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1579 RNA and VGAM1580 RNA respectively, herein schematically represented by VGAM1 RNA and VGAM2 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42131] VGAM1579 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1579 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1579 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1579 host target protein, herein schematically

represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42132] VGAM1580 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1580 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1580 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1580 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42133] It is appreciated that a function of VGR3081 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3081 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3081 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in

the operon-like cluster of VGR3081 gene: VGAM1579 host target protein and VGAM1580 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN and VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1579 and VGAM1580

[42134] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3082(VGR3082) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42135] VGR3082 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3082 gene was detected is described hereinabove with reference to Figs. 6–15.

[42136] VGR3082 gene encodes VGR3082 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42137] VGR3082 precursor RNA folds spatially, forming VGR3082

folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3082 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3082 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[42138] VGR3082 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM1581 precursor RNA, VGAM1582 precursor RNA, VGAM1583 precursor RNA, VGAM1584 precursor RNA, VGAM1585 precursor RNA, VGAM1586 precursor RNA, VGAM1587 precursor RNA and VGAM1588 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to

VGAM PRECURSOR RNA of Fig. 8.

[42139] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1581 RNA, VGAM1582 RNA, VGAM1583 RNA, VGAM1584 RNA, VGAM1585 RNA, VGAM1586 RNA, VGAM1587 RNA and VGAM1588 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42140] VGAM1581 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1581 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1581 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1581 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42141] VGAM1582 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1582 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1582 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1582 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42142] VGAM1583 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1583 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1583 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1583 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of

Fig. 1.

[42143] VGAM1584 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1584 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1584 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1584 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[42144] VGAM1585 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1585 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1585 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1585 host target protein, herein schematically

represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[42145] VGAM1586 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM1586 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1586 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM1586 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[42146] VGAM1587 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM1587 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1587 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA

into VGAM1587 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[42147] VGAM1588 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM1588 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1588 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM1588 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[42148] It is appreciated that a function of VGR3082 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3082 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3082 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target

genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3082 gene: VGAM1581 host target protein, VGAM1582 host target protein, VGAM1583 host target protein, VGAM1584 host target protein, VGAM1585 host target protein, VGAM1586 host target protein, VGAM1587 host target protein and VGAM1588 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1581, VGAM1582, VGAM1583, VGAM1584, VGAM1585, VGAM1586, VGAM1587 and VGAM1588

[42149] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3083(VGR3083) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42150] VGR3083 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding,

RNA viral gene. The method by which VGR3083 gene was detected is described hereinabove with reference to Figs. 6–15.

[42151] VGR3083 gene encodes VGR3083 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42152] VGR3083 precursor RNA folds spatially, forming VGR3083 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3083 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3083 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[42153] VGR3083 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 5 separate VGAM precursor RNAs, VGAM1589 precursor RNA, VGAM1590 precursor RNA, VGAM1591 precursor RNA, VGAM1592 precursor RNA and VGAM1593 precursor RNA, herein

schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR and VGAM5 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42154] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1589 RNA, VGAM1590 RNA, VGAM1591 RNA, VGAM1592 RNA and VGAM1593 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA and VGAM5 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42155] VGAM1589 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1589 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1589 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1589 host target protein, herein schematically

represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42156] VGAM1590 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1590 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1590 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1590 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42157] VGAM1591 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1591 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1591 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA

into VGAM1591 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42158] VGAM1592 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1592 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1592 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1592 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[42159] VGAM1593 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1593 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1593 host target RNA, herein

schematically represented by VGAM5 HOST TARGET RNA into VGAM1593 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[42160] It is appreciated that a function of VGR3083 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3083 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3083 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3083 gene: VGAM1589 host target protein, VGAM1590 host target protein, VGAM1591 host target protein, VGAM1592 host target protein and VGAM1593 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1589, VGAM1590, VGAM1591, VGAM1592 and VGAM1593

[42161] Fig. 9 further provides a conceptual description of novel

bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3084(VGR3084) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42162] VGR3084 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3084 gene was detected is described hereinabove with reference to Figs. 6–15.

[42163] VGR3084 gene encodes VGR3084 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42164] VGR3084 precursor RNA folds spatially, forming VGR3084 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3084 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3084 precursor RNA comprises a plurality of segments, the first half

of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[42165] VGR3084 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate VGAM precursor RNAs, VGAM1594 precursor RNA, VGAM1595 precursor RNA, VGAM1596 precursor RNA and VGAM1597 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR and VGAM4 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42166] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1594 RNA, VGAM1595 RNA, VGAM1596 RNA and VGAM1597 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA and VGAM4 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42167] VGAM1594 RNA, herein schematically represented by

VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1594 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1594 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1594 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42168] VGAM1595 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1595 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1595 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1595 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42169] VGAM1596 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1596 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1596 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1596 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42170] VGAM1597 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1597 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1597 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1597 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of

Fig. 1.

[42171] It is appreciated that a function of VGR3084 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3084 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3084 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3084 gene: VGAM1594 host target protein, VGAM1595 host target protein, VGAM1596 host target protein and VGAM1597 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1594, VGAM1595, VGAM1596 and VGAM1597

[42172] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3085(VGR3085) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates

expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42173] VGR3085 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3085 gene was detected is described hereinabove with reference to Figs. 6–15.

[42174] VGR3085 gene encodes VGR3085 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42175] VGR3085 precursor RNA folds spatially, forming VGR3085 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3085 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3085 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[42176] VGR3085 folded precursor RNA, herein designated VGR

FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 5 separate VGAM precursor RNAs, VGAM1598 precursor RNA, VGAM1599 precursor RNA, VGAM1600 precursor RNA, VGAM1601 precursor RNA and VGAM1602 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR and VGAM5 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42177] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1598 RNA, VGAM1599 RNA, VGAM1600 RNA, VGAM1601 RNA and VGAM1602 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA and VGAM5 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42178] VGAM1598 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1598 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1598 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1598 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42179] VGAM1599 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1599 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1599 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1599 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42180] VGAM1600 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1600 host target RNA, herein schematically represented by VGAM3

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1600 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1600 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42181] VGAM1601 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1601 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1601 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1601 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[42182] VGAM1602 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1602 host

target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1602 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1602 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[42183] It is appreciated that a function of VGR3085 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3085 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3085 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3085 gene: VGAM1598 host target protein, VGAM1599 host target protein, VGAM1600 host target protein, VGAM1601 host target protein and VGAM1602 host target protein, herein schematically represented by VGAM1 HOST TARGET PRO-

TEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1598, VGAM1599, VGAM1600, VGAM1601 and VGAM1602

[42184] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3086(VGR3086) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42185] VGR3086 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3086 gene was detected is described hereinabove with reference to Figs. 6–15.

[42186] VGR3086 gene encodes VGR3086 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42187] VGR3086 precursor RNA folds spatially, forming VGR3086 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3086 folded

precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3086 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[42188] VGR3086 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 6 separate VGAM precursor RNAs, VGAM1603 precursor RNA, VGAM1604 precursor RNA, VGAM1605 precursor RNA, VGAM1606 precursor RNA, VGAM1607 precursor RNA and VGAM1608 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR and VGAM6 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42189] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1603

RNA, VGAM1604 RNA, VGAM1605 RNA, VGAM1606 RNA, VGAM1607 RNA and VGAM1608 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA and VGAM6 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42190] VGAM1603 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1603 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1603 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1603 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42191] VGAM1604 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1604 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1604 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1604 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42192] VGAM1605 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1605 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1605 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1605 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42193] VGAM1606 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1606 host target RNA, herein schematically represented by VGAM4

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1606 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1606 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[42194] VGAM1607 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1607 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1607 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1607 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[42195] VGAM1608 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM1608 host

target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1608 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM1608 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[42196] It is appreciated that a function of VGR3086 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3086 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3086 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3086 gene: VGAM1603 host target protein, VGAM1604 host target protein, VGAM1605 host target protein, VGAM1606 host target protein, VGAM1607 host target protein and VGAM1608 host target protein, herein schematically represented by

VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1603, VGAM1604, VGAM1605, VGAM1606, VGAM1607 and VGAM1608

[42197] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3087(VGR3087) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42198] VGR3087 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3087 gene was detected is described hereinabove with reference to Figs. 6-15.

[42199] VGR3087 gene encodes VGR3087 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42200] VGR3087 precursor RNA folds spatially, forming VGR3087 folded precursor RNA, herein designated VGR FOLDED

PRECURSOR RNA. It is appreciated that VGR3087 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3087 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[42201] VGR3087 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM1609 precursor RNA, VGAM1610 precursor RNA, VGAM1611 precursor RNA, VGAM1612 precursor RNA, VGAM1613 precursor RNA, VGAM1614 precursor RNA, VGAM1615 precursor RNA and VGAM1616 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42202] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1609 RNA, VGAM1610 RNA, VGAM1611 RNA, VGAM1612 RNA, VGAM1613 RNA, VGAM1614 RNA, VGAM1615 RNA and VGAM1616 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42203] VGAM1609 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1609 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1609 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1609 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42204] VGAM1610 RNA, herein schematically represented by

VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1610 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1610 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1610 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42205] VGAM1611 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1611 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1611 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1611 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42206] VGAM1612 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1612 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1612 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1612 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[42207] VGAM1613 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1613 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1613 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1613 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of

Fig. 1.

[42208] VGAM1614 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM1614 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1614 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM1614 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[42209] VGAM1615 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM1615 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1615 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM1615 host target protein, herein schematically

represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[42210] VGAM1616 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM1616 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1616 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM1616 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[42211] It is appreciated that a function of VGR3087 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3087 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3087 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in

the operon-like cluster of VGR3087 gene: VGAM1609 host target protein, VGAM1610 host target protein, VGAM1611 host target protein, VGAM1612 host target protein, VGAM1613 host target protein, VGAM1614 host target protein, VGAM1615 host target protein and VGAM1616 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1609, VGAM1610, VGAM1611, VGAM1612, VGAM1613, VGAM1614, VGAM1615 and VGAM1616

[42212] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3088(VGR3088) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42213] VGR3088 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3088 gene was

detected is described hereinabove with reference to Figs. 6–15.

[42214] VGR3088 gene encodes VGR3088 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42215] VGR3088 precursor RNA folds spatially, forming VGR3088 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3088 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3088 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[42216] VGR3088 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 5 separate VGAM precursor RNAs, VGAM1617 precursor RNA, VGAM1618 precursor RNA, VGAM1619 precursor RNA, VGAM1620 precursor RNA and VGAM1621 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2

PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR and VGAM5 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42217] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1617 RNA, VGAM1618 RNA, VGAM1619 RNA, VGAM1620 RNA and VGAM1621 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA and VGAM5 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42218] VGAM1617 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1617 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1617 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1617 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of

Fig. 1.

[42219] VGAM1618 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1618 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1618 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1618 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42220] VGAM1619 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1619 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1619 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1619 host target protein, herein schematically

represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42221] VGAM1620 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1620 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1620 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1620 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[42222] VGAM1621 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1621 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1621 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA

into VGAM1621 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[42223] It is appreciated that a function of VGR3088 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3088 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3088 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3088 gene: VGAM1617 host target protein, VGAM1618 host target protein, VGAM1619 host target protein, VGAM1620 host target protein and VGAM1621 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1617, VGAM1618, VGAM1619, VGAM1620 and VGAM1621

[42224] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred

to here as Viral Genomic Record 3089(VGR3089) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42225] VGR3089 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3089 gene was detected is described hereinabove with reference to Figs. 6–15.

[42226] VGR3089 gene encodes VGR3089 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42227] VGR3089 precursor RNA folds spatially, forming VGR3089 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3089 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3089 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which

is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[42228] VGR3089 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM1622 precursor RNA, VGAM1623 precursor RNA, VGAM1624 precursor RNA, VGAM1625 precursor RNA, VGAM1626 precursor RNA, VGAM1627 precursor RNA, VGAM1628 precursor RNA and VGAM1629 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42229] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1622 RNA, VGAM1623 RNA, VGAM1624 RNA, VGAM1625 RNA, VGAM1626 RNA, VGAM1627 RNA, VGAM1628 RNA and VGAM1629 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4

RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42230] VGAM1622 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1622 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1622 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1622 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42231] VGAM1623 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1623 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1623 host target RNA, herein

schematically represented by VGAM2 HOST TARGET RNA into VGAM1623 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42232] VGAM1624 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1624 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1624 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1624 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42233] VGAM1625 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1625 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby in-

hibiting translation of VGAM1625 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1625 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[42234] VGAM1626 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1626 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1626 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1626 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[42235] VGAM1627 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM1627 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1627 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM1627 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[42236] VGAM1628 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM1628 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1628 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM1628 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[42237] VGAM1629 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM1629 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1629 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM1629 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[42238] It is appreciated that a function of VGR3089 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3089 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3089 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3089 gene: VGAM1622 host target protein, VGAM1623 host target protein, VGAM1624 host target protein, VGAM1625 host target protein, VGAM1626 host target protein, VGAM1627 host target protein, VGAM1628 host target protein and VGAM1629 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through

VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1622, VGAM1623, VGAM1624, VGAM1625, VGAM1626, VGAM1627, VGAM1628 and VGAM1629

[42239] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3090(VGR3090) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42240] VGR3090 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3090 gene was detected is described hereinabove with reference to Figs. 6–15.

[42241] VGR3090 gene encodes VGR3090 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42242] VGR3090 precursor RNA folds spatially, forming VGR3090 folded precursor RNA, herein designated VGR FOLDED

PRECURSOR RNA. It is appreciated that VGR3090 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3090 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[42243] VGR3090 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 5 separate VGAM precursor RNAs, VGAM1630 precursor RNA, VGAM1631 precursor RNA, VGAM1632 precursor RNA, VGAM1633 precursor RNA and VGAM1634 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR and VGAM5 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42244] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1630

RNA, VGAM1631 RNA, VGAM1632 RNA, VGAM1633 RNA and VGAM1634 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA and VGAM5 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42245] VGAM1630 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1630 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1630 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1630 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42246] VGAM1631 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1631 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1631 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1631 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42247] VGAM1632 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1632 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1632 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1632 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42248] VGAM1633 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1633 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1633 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1633 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[42249] VGAM1634 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1634 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1634 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1634 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[42250] It is appreciated that a function of VGR3090 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3090 gene include

diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3090 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3090 gene: VGAM1630 host target protein, VGAM1631 host target protein, VGAM1632 host target protein, VGAM1633 host target protein and VGAM1634 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1630, VGAM1631, VGAM1632, VGAM1633 and VGAM1634

[42251] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3091(VGR3091) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42252] VGR3091 gene, herein designated VGR GENE, is a novel

bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3091 gene was detected is described hereinabove with reference to Figs. 6–15.

[42253] VGR3091 gene encodes VGR3091 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42254] VGR3091 precursor RNA folds spatially, forming VGR3091 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3091 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3091 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[42255] VGR3091 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 6 separate VGAM precursor RNAs, VGAM1635 precursor RNA, VGAM1636 precursor RNA, VGAM1637 precursor RNA, VGAM1638 pre–

cursor RNA, VGAM1639 precursor RNA and VGAM1640 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR and VGAM6 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42256] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1635 RNA, VGAM1636 RNA, VGAM1637 RNA, VGAM1638 RNA, VGAM1639 RNA and VGAM1640 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA and VGAM6 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42257] VGAM1635 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1635 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby in-

hibiting translation of VGAM1635 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1635 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42258] VGAM1636 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1636 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1636 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1636 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42259] VGAM1637 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1637 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1637 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1637 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42260] VGAM1638 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1638 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1638 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1638 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[42261] VGAM1639 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1639 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1639 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1639 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[42262] VGAM1640 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM1640 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1640 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM1640 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[42263] It is appreciated that a function of VGR3091 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3091 gene include

diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3091 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3091 gene: VGAM1635 host target protein, VGAM1636 host target protein, VGAM1637 host target protein, VGAM1638 host target protein, VGAM1639 host target protein and VGAM1640 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1635, VGAM1636, VGAM1637, VGAM1638, VGAM1639 and VGAM1640

[42264] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3092(VGR3092) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42265] VGR3092 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3092 gene was detected is described hereinabove with reference to Figs. 6–15.

[42266] VGR3092 gene encodes VGR3092 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42267] VGR3092 precursor RNA folds spatially, forming VGR3092 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3092 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3092 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[42268] VGR3092 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate VGAM precursor RNAs, VGAM1641 precursor RNA, VGAM1642 pre–

cursor RNA and VGAM1643 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR and VGAM3 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42269] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1641 RNA, VGAM1642 RNA and VGAM1643 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA and VGAM3 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42270] VGAM1641 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1641 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1641 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1641 host target protein, herein schematically

represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42271] VGAM1642 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1642 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1642 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1642 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42272] VGAM1643 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1643 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1643 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA

into VGAM1643 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42273] It is appreciated that a function of VGR3092 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3092 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3092 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3092 gene: VGAM1641 host target protein, VGAM1642 host target protein and VGAM1643 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1641, VGAM1642 and VGAM1643

[42274] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3093(VGR3093) viral gene, which encodes an operon-like cluster of novel viral

micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42275] VGR3093 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3093 gene was detected is described hereinabove with reference to Figs. 6–15.

[42276] VGR3093 gene encodes VGR3093 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42277] VGR3093 precursor RNA folds spatially, forming VGR3093 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3093 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3093 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[42278] VGR3093 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate VGAM precursor RNAs, VGAM1644 precursor RNA, VGAM1645 precursor RNA and VGAM1646 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR and VGAM3 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42279] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1644 RNA, VGAM1645 RNA and VGAM1646 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA and VGAM3 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42280] VGAM1644 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1644 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1644 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1644 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42281] VGAM1645 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1645 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1645 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1645 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42282] VGAM1646 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1646 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1646 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1646 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42283] It is appreciated that a function of VGR3093 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3093 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3093 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3093 gene: VGAM1644 host target protein, VGAM1645 host target protein and VGAM1646 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1644, VGAM1645 and VGAM1646

[42284] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3094(VGR3094) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42285] VGR3094 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3094 gene was detected is described hereinabove with reference to Figs. 6–15.

[42286] VGR3094 gene encodes VGR3094 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42287] VGR3094 precursor RNA folds spatially, forming VGR3094 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3094 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3094 precu-

sor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[42288] VGR3094 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 5 separate VGAM precursor RNAs, VGAM1647 precursor RNA, VGAM1648 precursor RNA, VGAM1649 precursor RNA, VGAM1650 precursor RNA and VGAM1651 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR and VGAM5 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42289] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1647 RNA, VGAM1648 RNA, VGAM1649 RNA, VGAM1650 RNA and VGAM1651 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA and VGAM5 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42290] VGAM1647 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1647 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1647 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1647 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42291] VGAM1648 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1648 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1648 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1648 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of

Fig. 1.

[42292] VGAM1649 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1649 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1649 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1649 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42293] VGAM1650 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1650 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1650 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1650 host target protein, herein schematically

represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[42294] VGAM1651 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1651 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1651 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1651 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[42295] It is appreciated that a function of VGR3094 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3094 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3094 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in

the operon-like cluster of VGR3094 gene: VGAM1647 host target protein, VGAM1648 host target protein, VGAM1649 host target protein, VGAM1650 host target protein and VGAM1651 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1647, VGAM1648, VGAM1649, VGAM1650 and VGAM1651

[42296] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3095(VGR3095) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42297] VGR3095 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3095 gene was detected is described hereinabove with reference to Figs. 6-15.

[42298] VGR3095 gene encodes VGR3095 precursor RNA, herein

designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42299] VGR3095 precursor RNA folds spatially, forming VGR3095 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3095 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3095 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[42300] VGR3095 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate VGAM precursor RNAs, VGAM1652 precursor RNA, VGAM1653 precursor RNA, VGAM1654 precursor RNA and VGAM1655 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR and VGAM4 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig.

8.

[42301] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1652 RNA, VGAM1653 RNA, VGAM1654 RNA and VGAM1655 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA and VGAM4 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42302] VGAM1652 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1652 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1652 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1652 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42303] VGAM1653 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding

site located in an untranslated region of VGAM1653 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1653 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1653 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42304] VGAM1654 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1654 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1654 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1654 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42305] VGAM1655 RNA, herein schematically represented by

VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1655 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1655 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1655 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[42306] It is appreciated that a function of VGR3095 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3095 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3095 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3095 gene: VGAM1652 host target protein, VGAM1653 host target protein, VGAM1654 host target protein and VGAM1655 host target

protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1652, VGAM1653, VGAM1654 and VGAM1655

[42307] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3096(VGR3096) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42308] VGR3096 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3096 gene was detected is described hereinabove with reference to Figs. 6–15.

[42309] VGR3096 gene encodes VGR3096 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42310] VGR3096 precursor RNA folds spatially, forming VGR3096 folded precursor RNA, herein designated VGR FOLDED

PRECURSOR RNA. It is appreciated that VGR3096 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3096 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[42311] VGR3096 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 5 separate VGAM precursor RNAs, VGAM1656 precursor RNA, VGAM1657 precursor RNA, VGAM1658 precursor RNA, VGAM1659 precursor RNA and VGAM1660 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR and VGAM5 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42312] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1656

RNA, VGAM1657 RNA, VGAM1658 RNA, VGAM1659 RNA and VGAM1660 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA and VGAM5 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42313] VGAM1656 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1656 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1656 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1656 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42314] VGAM1657 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1657 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1657 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1657 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42315] VGAM1658 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1658 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1658 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1658 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42316] VGAM1659 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1659 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1659 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1659 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[42317] VGAM1660 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1660 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1660 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1660 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[42318] It is appreciated that a function of VGR3096 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3096 gene include

diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3096 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3096 gene: VGAM1656 host target protein, VGAM1657 host target protein, VGAM1658 host target protein, VGAM1659 host target protein and VGAM1660 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1656, VGAM1657, VGAM1658, VGAM1659 and VGAM1660

[42319] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3097(VGR3097) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42320] VGR3097 gene, herein designated VGR GENE, is a novel

bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3097 gene was detected is described hereinabove with reference to Figs. 6–15.

[42321] VGR3097 gene encodes VGR3097 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42322] VGR3097 precursor RNA folds spatially, forming VGR3097 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3097 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3097 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[42323] VGR3097 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate VGAM precursor RNAs, VGAM1661 precursor RNA, VGAM1662 precursor RNA, VGAM1663 precursor RNA and VGAM1664

precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR and VGAM4 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42324] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1661 RNA, VGAM1662 RNA, VGAM1663 RNA and VGAM1664 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA and VGAM4 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42325] VGAM1661 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1661 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1661 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA

into VGAM1661 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42326] VGAM1662 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1662 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1662 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1662 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42327] VGAM1663 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1663 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1663 host target RNA, herein

schematically represented by VGAM3 HOST TARGET RNA into VGAM1663 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42328] VGAM1664 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1664 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1664 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1664 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[42329] It is appreciated that a function of VGR3097 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3097 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3097 gene, herein designated VGR GENE, correlate with, and

may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3097 gene: VGAM1661 host target protein, VGAM1662 host target protein, VGAM1663 host target protein and VGAM1664 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1661, VGAM1662, VGAM1663 and VGAM1664

[42330] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3098(VGR3098) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42331] VGR3098 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3098 gene was detected is described hereinabove with reference to Figs. 6-15.

[42332] VGR3098 gene encodes VGR3098 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42333] VGR3098 precursor RNA folds spatially, forming VGR3098 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3098 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3098 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[42334] VGR3098 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate VGAM precursor RNAs, VGAM1665 precursor RNA, VGAM1666 precursor RNA and VGAM1667 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR and VGAM3 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig.

8.

[42335] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1665 RNA, VGAM1666 RNA and VGAM1667 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA and VGAM3 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42336] VGAM1665 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1665 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1665 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1665 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42337] VGAM1666 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1666 host

target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1666 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1666 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42338] VGAM1667 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1667 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1667 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1667 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42339] It is appreciated that a function of VGR3098 gene, herein designated VGR GENE, is inhibition of expression of host

target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3098 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3098 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3098 gene: VGAM1665 host target protein, VGAM1666 host target protein and VGAM1667 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1665, VGAM1666 and VGAM1667

[42340] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3099(VGR3099) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42341] VGR3099 gene, herein designated VGR GENE, is a novel

bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3099 gene was detected is described hereinabove with reference to Figs. 6–15.

[42342] VGR3099 gene encodes VGR3099 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42343] VGR3099 precursor RNA folds spatially, forming VGR3099 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3099 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3099 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[42344] VGR3099 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate VGAM precursor RNAs, VGAM1668 precursor RNA, VGAM1669 precursor RNA, VGAM1670 precursor RNA and VGAM1671

precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR and VGAM4 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42345] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1668 RNA, VGAM1669 RNA, VGAM1670 RNA and VGAM1671 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA and VGAM4 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42346] VGAM1668 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1668 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1668 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA

into VGAM1668 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42347] VGAM1669 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1669 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1669 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1669 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42348] VGAM1670 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1670 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1670 host target RNA, herein

schematically represented by VGAM3 HOST TARGET RNA into VGAM1670 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42349] VGAM1671 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1671 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1671 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1671 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[42350] It is appreciated that a function of VGR3099 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3099 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3099 gene, herein designated VGR GENE, correlate with, and

may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3099 gene: VGAM1668 host target protein, VGAM1669 host target protein, VGAM1670 host target protein and VGAM1671 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1668, VGAM1669, VGAM1670 and VGAM1671

[42351] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3100(VGR3100) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42352] VGR3100 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3100 gene was detected is described hereinabove with reference to Figs. 6-15.

[42353] VGR3100 gene encodes VGR3100 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42354] VGR3100 precursor RNA folds spatially, forming VGR3100 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3100 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3100 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[42355] VGR3100 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate VGAM precursor RNAs, VGAM1672 precursor RNA, VGAM1673 precursor RNA and VGAM1674 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR and VGAM3 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig.

8.

[42356] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1672 RNA, VGAM1673 RNA and VGAM1674 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA and VGAM3 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42357] VGAM1672 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1672 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1672 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1672 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42358] VGAM1673 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1673 host

target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1673 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1673 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42359] VGAM1674 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1674 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1674 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1674 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42360] It is appreciated that a function of VGR3100 gene, herein designated VGR GENE, is inhibition of expression of host

target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3100 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3100 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3100 gene: VGAM1672 host target protein, VGAM1673 host target protein and VGAM1674 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1672, VGAM1673 and VGAM1674

[42361] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3101(VGR3101) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42362] VGR3101 gene, herein designated VGR GENE, is a novel

bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3101 gene was detected is described hereinabove with reference to Figs. 6–15.

[42363] VGR3101 gene encodes VGR3101 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42364] VGR3101 precursor RNA folds spatially, forming VGR3101 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3101 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3101 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[42365] VGR3101 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 6 separate VGAM precursor RNAs, VGAM1675 precursor RNA, VGAM1676 precursor RNA, VGAM1677 precursor RNA, VGAM1678 pre–

cursor RNA, VGAM1679 precursor RNA and VGAM1680 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR and VGAM6 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42366] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1675 RNA, VGAM1676 RNA, VGAM1677 RNA, VGAM1678 RNA, VGAM1679 RNA and VGAM1680 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA and VGAM6 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42367] VGAM1675 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1675 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby in-

hibiting translation of VGAM1675 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1675 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42368] VGAM1676 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1676 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1676 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1676 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42369] VGAM1677 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1677 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1677 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1677 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42370] VGAM1678 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1678 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1678 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1678 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[42371] VGAM1679 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1679 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1679 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1679 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[42372] VGAM1680 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM1680 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1680 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM1680 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[42373] It is appreciated that a function of VGR3101 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3101 gene include

diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3101 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3101 gene: VGAM1675 host target protein, VGAM1676 host target protein, VGAM1677 host target protein, VGAM1678 host target protein, VGAM1679 host target protein and VGAM1680 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1675, VGAM1676, VGAM1677, VGAM1678, VGAM1679 and VGAM1680

[42374] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3102(VGR3102) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42375] VGR3102 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3102 gene was detected is described hereinabove with reference to Figs. 6–15.

[42376] VGR3102 gene encodes VGR3102 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42377] VGR3102 precursor RNA folds spatially, forming VGR3102 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3102 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3102 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[42378] VGR3102 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 6 separate VGAM precursor RNAs, VGAM1681 precursor RNA, VGAM1682 pre–

cursor RNA, VGAM1683 precursor RNA, VGAM1684 precursor RNA, VGAM1685 precursor RNA and VGAM1686 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR and VGAM6 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42379] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1681 RNA, VGAM1682 RNA, VGAM1683 RNA, VGAM1684 RNA, VGAM1685 RNA and VGAM1686 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA and VGAM6 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42380] VGAM1681 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1681 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1681 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1681 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42381] VGAM1682 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1682 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1682 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1682 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42382] VGAM1683 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1683 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1683 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1683 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42383] VGAM1684 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1684 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1684 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1684 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[42384] VGAM1685 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1685 host target RNA, herein schematically represented by VGAM5

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1685 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1685 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[42385] VGAM1686 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM1686 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1686 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM1686 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[42386] It is appreciated that a function of VGR3102 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attack–

ing a host. Accordingly, utilities of VGR3102 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3102 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3102 gene: VGAM1681 host target protein, VGAM1682 host target protein, VGAM1683 host target protein, VGAM1684 host target protein, VGAM1685 host target protein and VGAM1686 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1681, VGAM1682, VGAM1683, VGAM1684, VGAM1685 and VGAM1686

[42387] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3103(VGR3103) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known

in the art.

[42388] VGR3103 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3103 gene was detected is described hereinabove with reference to Figs. 6–15.

[42389] VGR3103 gene encodes VGR3103 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42390] VGR3103 precursor RNA folds spatially, forming VGR3103 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3103 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3103 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[42391] VGR3103 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate VGAM pre–

cursor RNAs, VGAM1687 precursor RNA, VGAM1688 precursor RNA and VGAM1689 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR and VGAM3 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42392] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1687 RNA, VGAM1688 RNA and VGAM1689 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA and VGAM3 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42393] VGAM1687 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1687 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1687 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA

into VGAM1687 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42394] VGAM1688 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1688 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1688 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1688 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42395] VGAM1689 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1689 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1689 host target RNA, herein

schematically represented by VGAM3 HOST TARGET RNA into VGAM1689 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42396] It is appreciated that a function of VGR3103 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3103 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3103 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3103 gene: VGAM1687 host target protein, VGAM1688 host target protein and VGAM1689 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1687, VGAM1688 and VGAM1689

[42397] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3104(VGR3104) viral

gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42398] VGR3104 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3104 gene was detected is described hereinabove with reference to Figs. 6–15.

[42399] VGR3104 gene encodes VGR3104 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42400] VGR3104 precursor RNA folds spatially, forming VGR3104 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3104 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3104 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the

second half thereof, as is well known in the art.

[42401] VGR3104 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM1690 precursor RNA, VGAM1691 precursor RNA, VGAM1692 precursor RNA, VGAM1693 precursor RNA, VGAM1694 precursor RNA, VGAM1695 precursor RNA, VGAM1696 precursor RNA and VGAM1697 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42402] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1690 RNA, VGAM1691 RNA, VGAM1692 RNA, VGAM1693 RNA, VGAM1694 RNA, VGAM1695 RNA, VGAM1696 RNA and VGAM1697 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8

RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42403] VGAM1690 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1690 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1690 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1690 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42404] VGAM1691 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1691 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1691 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA

into VGAM1691 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42405] VGAM1692 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1692 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1692 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1692 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42406] VGAM1693 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1693 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1693 host target RNA, herein

schematically represented by VGAM4 HOST TARGET RNA into VGAM1693 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[42407] VGAM1694 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1694 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1694 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1694 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[42408] VGAM1695 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM1695 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby in-

hibiting translation of VGAM1695 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM1695 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[42409] VGAM1696 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM1696 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1696 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM1696 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[42410] VGAM1697 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM1697 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1697 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM1697 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[42411] It is appreciated that a function of VGR3104 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3104 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3104 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3104 gene: VGAM1690 host target protein, VGAM1691 host target protein, VGAM1692 host target protein, VGAM1693 host target protein, VGAM1694 host target protein, VGAM1695 host target protein, VGAM1696 host target protein and VGAM1697 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function

of these host target genes is elaborated hereinabove with reference to VGAM1690, VGAM1691, VGAM1692, VGAM1693, VGAM1694, VGAM1695, VGAM1696 and VGAM1697

[42412] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3105(VGR3105) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42413] VGR3105 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3105 gene was detected is described hereinabove with reference to Figs. 6–15.

[42414] VGR3105 gene encodes VGR3105 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42415] VGR3105 precursor RNA folds spatially, forming VGR3105 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3105 folded

precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3105 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[42416] VGR3105 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM1698 precursor RNA, VGAM1699 precursor RNA, VGAM1700 precursor RNA, VGAM1701 precursor RNA, VGAM1702 precursor RNA, VGAM1703 precursor RNA, VGAM1704 precursor RNA and VGAM1705 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42417] The above mentioned VGAM precursor RNAs are diced by

DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1698 RNA, VGAM1699 RNA, VGAM1700 RNA, VGAM1701 RNA, VGAM1702 RNA, VGAM1703 RNA, VGAM1704 RNA and VGAM1705 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42418] VGAM1698 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1698 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1698 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1698 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42419] VGAM1699 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding

site located in an untranslated region of VGAM1699 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1699 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1699 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42420] VGAM1700 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1700 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1700 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1700 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42421] VGAM1701 RNA, herein schematically represented by

VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1701 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1701 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1701 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[42422] VGAM1702 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1702 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1702 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1702 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[42423] VGAM1703 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM1703 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1703 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM1703 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[42424] VGAM1704 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM1704 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1704 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM1704 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of

Fig. 1.

[42425] VGAM1705 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM1705 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1705 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM1705 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[42426] It is appreciated that a function of VGR3105 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3105 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3105 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3105 gene: VGAM1698

host target protein, VGAM1699 host target protein, VGAM1700 host target protein, VGAM1701 host target protein, VGAM1702 host target protein, VGAM1703 host target protein, VGAM1704 host target protein and VGAM1705 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1698, VGAM1699, VGAM1700, VGAM1701, VGAM1702, VGAM1703, VGAM1704 and VGAM1705

[42427] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3106(VGR3106) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42428] VGR3106 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3106 gene was detected is described hereinabove with reference to Figs.

6-15.

[42429] VGR3106 gene encodes VGR3106 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42430] VGR3106 precursor RNA folds spatially, forming VGR3106 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3106 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3106 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[42431] VGR3106 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate VGAM precursor RNAs, VGAM1706 precursor RNA and VGAM1707 precursor RNA, herein schematically represented by VGAM1 PRECURSOR and VGAM2 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECUR-

SOR RNA of Fig. 8.

[42432] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1706 RNA and VGAM1707 RNA respectively, herein schematically represented by VGAM1 RNA and VGAM2 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42433] VGAM1706 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1706 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1706 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1706 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42434] VGAM1707 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1707 host

target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1707 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1707 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42435] It is appreciated that a function of VGR3106 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3106 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3106 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3106 gene: VGAM1706 host target protein and VGAM1707 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN and VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated

hereinabove with reference to VGAM1706 and VGAM1707

[42436] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3107(VGR3107) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42437] VGR3107 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3107 gene was detected is described hereinabove with reference to Figs. 6–15.

[42438] VGR3107 gene encodes VGR3107 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42439] VGR3107 precursor RNA folds spatially, forming VGR3107 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3107 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to

the fact that the nucleotide sequence of VGR3107 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[42440] VGR3107 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate VGAM precursor RNAs, VGAM1709 precursor RNA, VGAM1710 precursor RNA and VGAM1711 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR and VGAM3 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42441] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1709 RNA, VGAM1710 RNA and VGAM1711 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA and VGAM3 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42442] VGAM1709 RNA, herein schematically represented by

VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1709 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1709 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1709 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42443] VGAM1710 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1710 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1710 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1710 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42444] VGAM1711 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1711 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1711 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1711 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42445] It is appreciated that a function of VGR3107 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3107 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3107 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3107 gene: VGAM1709 host target protein, VGAM1710 host target protein and

VGAM1711 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1709, VGAM1710 and VGAM1711

[42446] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3108(VGR3108) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42447] VGR3108 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3108 gene was detected is described hereinabove with reference to Figs. 6-15.

[42448] VGR3108 gene encodes VGR3108 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42449] VGR3108 precursor RNA folds spatially, forming VGR3108 folded precursor RNA, herein designated VGR FOLDED

PRECURSOR RNA. It is appreciated that VGR3108 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3108 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[42450] VGR3108 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 5 separate VGAM precursor RNAs, VGAM1712 precursor RNA, VGAM1713 precursor RNA, VGAM1714 precursor RNA, VGAM1715 precursor RNA and VGAM1716 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR and VGAM5 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42451] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1712

RNA, VGAM1713 RNA, VGAM1714 RNA, VGAM1715 RNA and VGAM1716 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA and VGAM5 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42452] VGAM1712 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1712 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1712 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1712 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42453] VGAM1713 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1713 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1713 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1713 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42454] VGAM1714 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1714 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1714 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1714 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42455] VGAM1715 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1715 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1715 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1715 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[42456] VGAM1716 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1716 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1716 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1716 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[42457] It is appreciated that a function of VGR3108 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3108 gene include

diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3108 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3108 gene: VGAM1712 host target protein, VGAM1713 host target protein, VGAM1714 host target protein, VGAM1715 host target protein and VGAM1716 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1712, VGAM1713, VGAM1714, VGAM1715 and VGAM1716

[42458] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3109(VGR3109) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42459] VGR3109 gene, herein designated VGR GENE, is a novel

bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3109 gene was detected is described hereinabove with reference to Figs. 6–15.

[42460] VGR3109 gene encodes VGR3109 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42461] VGR3109 precursor RNA folds spatially, forming VGR3109 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3109 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3109 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[42462] VGR3109 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate VGAM precursor RNAs, VGAM1717 precursor RNA and VGAM1718 precursor RNA, herein schematically represented by

VGAM1 PRECURSOR and VGAM2 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42463] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1717 RNA and VGAM1718 RNA respectively, herein schematically represented by VGAM1 RNA and VGAM2 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42464] VGAM1717 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1717 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1717 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1717 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42465] VGAM1718 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1718 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1718 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1718 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42466] It is appreciated that a function of VGR3109 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3109 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3109 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3109 gene: VGAM1717 host target protein and VGAM1718 host target protein,

herein schematically represented by VGAM1 HOST TARGET PROTEIN and VGAM HOST TARGET PROTEIN respectively.

The function of these host target genes is elaborated hereinabove with reference to VGAM1717 and VGAM1718

[42467] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3110(VGR3110) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42468] VGR3110 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3110 gene was detected is described hereinabove with reference to Figs. 6–15.

[42469] VGR3110 gene encodes VGR3110 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42470] VGR3110 precursor RNA folds spatially, forming VGR3110 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3110 folded

precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3110 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[42471] VGR3110 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate VGAM precursor RNAs, VGAM1719 precursor RNA and VGAM1720 precursor RNA, herein schematically represented by VGAM1 PRECURSOR and VGAM2 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42472] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1719 RNA and VGAM1720 RNA respectively, herein schematically represented by VGAM1 RNA and VGAM2 RNA respectively, each of which VGAM RNAs corresponding to VGAM

RNA of Fig. 8.

[42473] VGAM1719 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1719 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1719 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1719 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42474] VGAM1720 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1720 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1720 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1720 host target protein, herein schematically

represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42475] It is appreciated that a function of VGR3110 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3110 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3110 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3110 gene: VGAM1719 host target protein and VGAM1720 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN and VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1719 and VGAM1720

[42476] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3111(VGR3111) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function

and utility of which at least one host target gene is known in the art.

[42477] VGR3111 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3111 gene was detected is described hereinabove with reference to Figs. 6–15.

[42478] VGR3111 gene encodes VGR3111 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42479] VGR3111 precursor RNA folds spatially, forming VGR3111 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3111 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3111 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[42480] VGR3111 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellu–

lar enzymatic activity into at least 3 separate VGAM precursor RNAs, VGAM1721 precursor RNA, VGAM1722 precursor RNA and VGAM1723 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR and VGAM3 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42481] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1721 RNA, VGAM1722 RNA and VGAM1723 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA and VGAM3 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42482] VGAM1721 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1721 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1721 host target RNA, herein

schematically represented by VGAM1 HOST TARGET RNA into VGAM1721 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42483] VGAM1722 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1722 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1722 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1722 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42484] VGAM1723 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1723 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby in-

hibiting translation of VGAM1723 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1723 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42485] It is appreciated that a function of VGR3111 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3111 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3111 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3111 gene: VGAM1721 host target protein, VGAM1722 host target protein and VGAM1723 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1721, VGAM1722 and VGAM1723

[42486] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred

to here as Viral Genomic Record 3112(VGR3112) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42487] VGR3112 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3112 gene was detected is described hereinabove with reference to Figs. 6-15.

[42488] VGR3112 gene encodes VGR3112 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42489] VGR3112 precursor RNA folds spatially, forming VGR3112 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3112 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3112 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which

is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[42490] VGR3112 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 7 separate VGAM precursor RNAs, VGAM1724 precursor RNA, VGAM1725 precursor RNA, VGAM1726 precursor RNA, VGAM1727 precursor RNA, VGAM1728 precursor RNA, VGAM1729 precursor RNA and VGAM1730 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR and VGAM7 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42491] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1724 RNA, VGAM1725 RNA, VGAM1726 RNA, VGAM1727 RNA, VGAM1728 RNA, VGAM1729 RNA and VGAM1730 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA and VGAM7 RNA respectively, each of

which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42492] VGAM1724 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1724 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1724 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1724 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42493] VGAM1725 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1725 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1725 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1725 host target protein, herein schematically

represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42494] VGAM1726 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1726 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1726 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1726 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42495] VGAM1727 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1727 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1727 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA

into VGAM1727 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[42496] VGAM1728 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1728 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1728 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1728 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[42497] VGAM1729 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM1729 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1729 host target RNA, herein

schematically represented by VGAM6 HOST TARGET RNA into VGAM1729 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[42498] VGAM1730 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM1730 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1730 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM1730 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[42499] It is appreciated that a function of VGR3112 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3112 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3112 gene, herein designated VGR GENE, correlate with, and

may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3112 gene: VGAM1724 host target protein, VGAM1725 host target protein, VGAM1726 host target protein, VGAM1727 host target protein, VGAM1728 host target protein, VGAM1729 host target protein and VGAM1730 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1724, VGAM1725, VGAM1726, VGAM1727, VGAM1728, VGAM1729 and VGAM1730

[42500] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3113(VGR3113) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42501] VGR3113 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding,

RNA viral gene. The method by which VGR3113 gene was detected is described hereinabove with reference to Figs. 6–15.

[42502] VGR3113 gene encodes VGR3113 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42503] VGR3113 precursor RNA folds spatially, forming VGR3113 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3113 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3113 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[42504] VGR3113 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate VGAM precursor RNAs, VGAM1731 precursor RNA and VGAM1732 precursor RNA, herein schematically represented by VGAM1 PRECURSOR and VGAM2 PRECURSOR respectively,

each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42505] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1731 RNA and VGAM1732 RNA respectively, herein schematically represented by VGAM1 RNA and VGAM2 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42506] VGAM1731 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1731 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1731 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1731 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42507] VGAM1732 RNA, herein schematically represented by

VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1732 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1732 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1732 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42508] It is appreciated that a function of VGR3113 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3113 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3113 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3113 gene: VGAM1731 host target protein and VGAM1732 host target protein, herein schematically represented by VGAM1 HOST TARGET

PROTEIN and VGAM HOST TARGET PROTEIN respectively.

The function of these host target genes is elaborated hereinabove with reference to VGAM1731 and VGAM1732

[42509] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3114(VGR3114) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42510] VGR3114 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3114 gene was detected is described hereinabove with reference to Figs. 6–15.

[42511] VGR3114 gene encodes VGR3114 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42512] VGR3114 precursor RNA folds spatially, forming VGR3114 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3114 folded precursor RNA, herein designated VGR FOLDED PRECUR-

SOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3114 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[42513] VGR3114 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM1733 precursor RNA, VGAM1734 precursor RNA, VGAM1735 precursor RNA, VGAM1736 precursor RNA, VGAM1737 precursor RNA, VGAM1738 precursor RNA, VGAM1739 precursor RNA and VGAM1740 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42514] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA

segments of about 22 nucleotides in length, VGAM1733 RNA, VGAM1734 RNA, VGAM1735 RNA, VGAM1736 RNA, VGAM1737 RNA, VGAM1738 RNA, VGAM1739 RNA and VGAM1740 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42515] VGAM1733 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1733 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1733 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1733 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42516] VGAM1734 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1734 host

target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1734 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1734 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42517] VGAM1735 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1735 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1735 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1735 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42518] VGAM1736 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding

site located in an untranslated region of VGAM1736 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1736 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1736 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[42519] VGAM1737 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1737 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1737 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1737 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[42520] VGAM1738 RNA, herein schematically represented by

VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM1738 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1738 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM1738 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[42521] VGAM1739 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM1739 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1739 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM1739 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[42522] VGAM1740 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM1740 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1740 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM1740 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[42523] It is appreciated that a function of VGR3114 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3114 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3114 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3114 gene: VGAM1733 host target protein, VGAM1734 host target protein,

VGAM1735 host target protein, VGAM1736 host target protein, VGAM1737 host target protein, VGAM1738 host target protein, VGAM1739 host target protein and VGAM1740 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1733, VGAM1734, VGAM1735, VGAM1736, VGAM1737, VGAM1738, VGAM1739 and VGAM1740

[42524] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3115(VGR3115) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42525] VGR3115 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3115 gene was detected is described hereinabove with reference to Figs. 6-15.

[42526] VGR3115 gene encodes VGR3115 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42527] VGR3115 precursor RNA folds spatially, forming VGR3115 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3115 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3115 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[42528] VGR3115 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 6 separate VGAM precursor RNAs, VGAM1741 precursor RNA, VGAM1742 precursor RNA, VGAM1743 precursor RNA, VGAM1744 precursor RNA, VGAM1745 precursor RNA and VGAM1746 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR and

VGAM6 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42529] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1741 RNA, VGAM1742 RNA, VGAM1743 RNA, VGAM1744 RNA, VGAM1745 RNA and VGAM1746 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA and VGAM6 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42530] VGAM1741 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1741 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1741 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1741 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of

Fig. 1.

[42531] VGAM1742 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1742 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1742 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1742 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42532] VGAM1743 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1743 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1743 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1743 host target protein, herein schematically

represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42533] VGAM1744 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1744 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1744 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1744 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[42534] VGAM1745 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1745 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1745 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA

into VGAM1745 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[42535] VGAM1746 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM1746 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1746 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM1746 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[42536] It is appreciated that a function of VGR3115 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3115 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3115 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target

genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3115 gene: VGAM1741 host target protein, VGAM1742 host target protein, VGAM1743 host target protein, VGAM1744 host target protein, VGAM1745 host target protein and VGAM1746 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1741, VGAM1742, VGAM1743, VGAM1744, VGAM1745 and VGAM1746

[42537] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3116(VGR3116) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42538] VGR3116 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3116 gene was detected is described hereinabove with reference to Figs.

6-15.

[42539] VGR3116 gene encodes VGR3116 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42540] VGR3116 precursor RNA folds spatially, forming VGR3116 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3116 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3116 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[42541] VGR3116 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM1747 precursor RNA, VGAM1748 precursor RNA, VGAM1749 precursor RNA, VGAM1750 precursor RNA, VGAM1751 precursor RNA, VGAM1752 precursor RNA, VGAM1753 precursor RNA and VGAM1754 precursor RNA, herein schematically represented by

VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42542] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1747 RNA, VGAM1748 RNA, VGAM1749 RNA, VGAM1750 RNA, VGAM1751 RNA, VGAM1752 RNA, VGAM1753 RNA and VGAM1754 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42543] VGAM1747 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1747 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby in-

hibiting translation of VGAM1747 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1747 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42544] VGAM1748 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1748 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1748 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1748 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42545] VGAM1749 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1749 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1749 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1749 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42546] VGAM1750 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1750 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1750 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1750 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[42547] VGAM1751 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1751 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1751 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1751 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[42548] VGAM1752 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM1752 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1752 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM1752 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[42549] VGAM1753 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM1753 host target RNA, herein schematically represented by VGAM7

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1753 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM1753 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[42550] VGAM1754 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM1754 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1754 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM1754 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[42551] It is appreciated that a function of VGR3116 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attack–

ing a host. Accordingly, utilities of VGR3116 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3116 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3116 gene: VGAM1747 host target protein, VGAM1748 host target protein, VGAM1749 host target protein, VGAM1750 host target protein, VGAM1751 host target protein, VGAM1752 host target protein, VGAM1753 host target protein and VGAM1754 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1747, VGAM1748, VGAM1749, VGAM1750, VGAM1751, VGAM1752, VGAM1753 and VGAM1754

[42552] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3117(VGR3117) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates

expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42553] VGR3117 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3117 gene was detected is described hereinabove with reference to Figs. 6–15.

[42554] VGR3117 gene encodes VGR3117 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42555] VGR3117 precursor RNA folds spatially, forming VGR3117 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3117 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3117 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[42556] VGR3117 folded precursor RNA, herein designated VGR

FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate VGAM precursor RNAs, VGAM1755 precursor RNA, VGAM1756 precursor RNA, VGAM1757 precursor RNA and VGAM1758 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR and VGAM4 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42557] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1755 RNA, VGAM1756 RNA, VGAM1757 RNA and VGAM1758 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA and VGAM4 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42558] VGAM1755 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1755 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1755 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1755 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42559] VGAM1756 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1756 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1756 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1756 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42560] VGAM1757 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1757 host target RNA, herein schematically represented by VGAM3

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1757 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1757 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42561] VGAM1758 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1758 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1758 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1758 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[42562] It is appreciated that a function of VGR3117 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attack–

ing a host. Accordingly, utilities of VGR3117 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3117 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3117 gene: VGAM1755 host target protein, VGAM1756 host target protein, VGAM1757 host target protein and VGAM1758 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1755, VGAM1756, VGAM1757 and VGAM1758

[42563] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3118(VGR3118) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42564] VGR3118 gene, herein designated VGR GENE, is a novel

bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3118 gene was detected is described hereinabove with reference to Figs. 6–15.

[42565] VGR3118 gene encodes VGR3118 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42566] VGR3118 precursor RNA folds spatially, forming VGR3118 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3118 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3118 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[42567] VGR3118 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM1759 precursor RNA, VGAM1760 precursor RNA, VGAM1761 precursor RNA, VGAM1762 pre–

cursor RNA, VGAM1763 precursor RNA, VGAM1764 precursor RNA, VGAM1765 precursor RNA and VGAM1766 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42568] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1759 RNA, VGAM1760 RNA, VGAM1761 RNA, VGAM1762 RNA, VGAM1763 RNA, VGAM1764 RNA, VGAM1765 RNA and VGAM1766 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42569] VGAM1759 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1759 host target RNA, herein schematically represented by VGAM1

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1759 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1759 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42570] VGAM1760 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1760 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1760 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1760 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42571] VGAM1761 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1761 host

target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1761 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1761 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42572] VGAM1762 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1762 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1762 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1762 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[42573] VGAM1763 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding

site located in an untranslated region of VGAM1763 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1763 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1763 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[42574] VGAM1764 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM1764 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1764 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM1764 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[42575] VGAM1765 RNA, herein schematically represented by

VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM1765 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1765 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM1765 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[42576] VGAM1766 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM1766 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1766 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM1766 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[42577] It is appreciated that a function of VGR3118 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3118 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3118 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3118 gene: VGAM1759 host target protein, VGAM1760 host target protein, VGAM1761 host target protein, VGAM1762 host target protein, VGAM1763 host target protein, VGAM1764 host target protein, VGAM1765 host target protein and VGAM1766 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1759, VGAM1760, VGAM1761, VGAM1762, VGAM1763, VGAM1764, VGAM1765 and VGAM1766

[42578] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred

to here as Viral Genomic Record 3119(VGR3119) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42579] VGR3119 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3119 gene was detected is described hereinabove with reference to Figs. 6-15.

[42580] VGR3119 gene encodes VGR3119 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42581] VGR3119 precursor RNA folds spatially, forming VGR3119 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3119 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3119 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which

is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[42582] VGR3119 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate VGAM precursor RNAs, VGAM1767 precursor RNA, VGAM1768 precursor RNA, VGAM1769 precursor RNA and VGAM1770 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR and VGAM4 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42583] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1767 RNA, VGAM1768 RNA, VGAM1769 RNA and VGAM1770 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA and VGAM4 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42584] VGAM1767 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding

site located in an untranslated region of VGAM1767 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1767 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1767 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42585] VGAM1768 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1768 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1768 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1768 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42586] VGAM1769 RNA, herein schematically represented by

VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1769 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1769 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1769 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42587] VGAM1770 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1770 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1770 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1770 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[42588] It is appreciated that a function of VGR3119 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3119 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3119 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3119 gene: VGAM1767 host target protein, VGAM1768 host target protein, VGAM1769 host target protein and VGAM1770 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1767, VGAM1768, VGAM1769 and VGAM1770

[42589] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3120(VGR3120) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function

and utility of which at least one host target gene is known in the art.

[42590] VGR3120 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3120 gene was detected is described hereinabove with reference to Figs. 6–15.

[42591] VGR3120 gene encodes VGR3120 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42592] VGR3120 precursor RNA folds spatially, forming VGR3120 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3120 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3120 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[42593] VGR3120 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellu–

lar enzymatic activity into at least 2 separate VGAM precursor RNAs, VGAM1771 precursor RNA and VGAM1772 precursor RNA, herein schematically represented by VGAM1 PRECURSOR and VGAM2 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42594] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1771 RNA and VGAM1772 RNA respectively, herein schematically represented by VGAM1 RNA and VGAM2 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42595] VGAM1771 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1771 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1771 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA

into VGAM1771 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42596] VGAM1772 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1772 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1772 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1772 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42597] It is appreciated that a function of VGR3120 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3120 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3120 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target

genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3120 gene: VGAM1771 host target protein and VGAM1772 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN and VGAM HOST TARGET PROTEIN respectively.

The function of these host target genes is elaborated hereinabove with reference to VGAM1771 and VGAM1772

[42598] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3121(VGR3121) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42599] VGR3121 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3121 gene was detected is described hereinabove with reference to Figs. 6-15.

[42600] VGR3121 gene encodes VGR3121 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42601] VGR3121 precursor RNA folds spatially, forming VGR3121 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3121 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3121 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[42602] VGR3121 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM1773 precursor RNA, VGAM1774 precursor RNA, VGAM1775 precursor RNA, VGAM1776 precursor RNA, VGAM1777 precursor RNA, VGAM1778 precursor RNA, VGAM1779 precursor RNA and VGAM1780 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs

being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42603] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1773 RNA, VGAM1774 RNA, VGAM1775 RNA, VGAM1776 RNA, VGAM1777 RNA, VGAM1778 RNA, VGAM1779 RNA and VGAM1780 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42604] VGAM1773 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1773 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1773 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1773 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of

Fig. 1.

[42605] VGAM1774 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1774 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1774 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1774 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42606] VGAM1775 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1775 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1775 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1775 host target protein, herein schematically

represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42607] VGAM1776 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1776 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1776 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1776 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[42608] VGAM1777 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1777 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1777 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA

into VGAM1777 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[42609] VGAM1778 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM1778 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1778 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM1778 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[42610] VGAM1779 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM1779 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1779 host target RNA, herein

schematically represented by VGAM7 HOST TARGET RNA into VGAM1779 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[42611] VGAM1780 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM1780 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1780 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM1780 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[42612] It is appreciated that a function of VGR3121 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3121 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3121 gene, herein designated VGR GENE, correlate with, and

may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3121 gene: VGAM1773 host target protein, VGAM1774 host target protein, VGAM1775 host target protein, VGAM1776 host target protein, VGAM1777 host target protein, VGAM1778 host target protein, VGAM1779 host target protein and VGAM1780 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1773, VGAM1774, VGAM1775, VGAM1776, VGAM1777, VGAM1778, VGAM1779 and VGAM1780

[42613] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3122(VGR3122) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42614] VGR3122 gene, herein designated VGR GENE, is a novel

bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3122 gene was detected is described hereinabove with reference to Figs. 6–15.

[42615] VGR3122 gene encodes VGR3122 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42616] VGR3122 precursor RNA folds spatially, forming VGR3122 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3122 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3122 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[42617] VGR3122 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate VGAM precursor RNAs, VGAM1781 precursor RNA and VGAM1782 precursor RNA, herein schematically represented by

VGAM1 PRECURSOR and VGAM2 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42618] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1781 RNA and VGAM1782 RNA respectively, herein schematically represented by VGAM1 RNA and VGAM2 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42619] VGAM1781 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1781 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1781 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1781 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42620] VGAM1782 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1782 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1782 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1782 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42621] It is appreciated that a function of VGR3122 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3122 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3122 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3122 gene: VGAM1781 host target protein and VGAM1782 host target protein,

herein schematically represented by VGAM1 HOST TARGET PROTEIN and VGAM HOST TARGET PROTEIN respectively.

The function of these host target genes is elaborated hereinabove with reference to VGAM1781 and VGAM1782

[42622] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3123(VGR3123) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42623] VGR3123 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3123 gene was detected is described hereinabove with reference to Figs. 6–15.

[42624] VGR3123 gene encodes VGR3123 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42625] VGR3123 precursor RNA folds spatially, forming VGR3123 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3123 folded

precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3123 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[42626] VGR3123 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 7 separate VGAM precursor RNAs, VGAM1783 precursor RNA, VGAM1784 precursor RNA, VGAM1785 precursor RNA, VGAM1786 precursor RNA, VGAM1787 precursor RNA, VGAM1788 precursor RNA and VGAM1789 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR and VGAM7 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42627] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA

segments of about 22 nucleotides in length, VGAM1783 RNA, VGAM1784 RNA, VGAM1785 RNA, VGAM1786 RNA, VGAM1787 RNA, VGAM1788 RNA and VGAM1789 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA and VGAM7 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42628] VGAM1783 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1783 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1783 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1783 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42629] VGAM1784 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1784 host target RNA, herein schematically represented by VGAM2

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1784 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1784 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42630] VGAM1785 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1785 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1785 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1785 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42631] VGAM1786 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1786 host

target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1786 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1786 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[42632] VGAM1787 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1787 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1787 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1787 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[42633] VGAM1788 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding

site located in an untranslated region of VGAM1788 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1788 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM1788 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[42634] VGAM1789 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM1789 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1789 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM1789 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[42635] It is appreciated that a function of VGR3123 gene, herein

designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3123 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3123 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3123 gene: VGAM1783 host target protein, VGAM1784 host target protein, VGAM1785 host target protein, VGAM1786 host target protein, VGAM1787 host target protein, VGAM1788 host target protein and VGAM1789 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1783, VGAM1784, VGAM1785, VGAM1786, VGAM1787, VGAM1788 and VGAM1789

[42636] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3124(VGR3124) viral gene, which encodes an operon-like cluster of novel viral

micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42637] VGR3124 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3124 gene was detected is described hereinabove with reference to Figs. 6–15.

[42638] VGR3124 gene encodes VGR3124 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42639] VGR3124 precursor RNA folds spatially, forming VGR3124 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3124 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3124 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[42640] VGR3124 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 7 separate VGAM precursor RNAs, VGAM1790 precursor RNA, VGAM1791 precursor RNA, VGAM1792 precursor RNA, VGAM1793 precursor RNA, VGAM1794 precursor RNA, VGAM1795 precursor RNA and VGAM1796 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR and VGAM7 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42641] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1790 RNA, VGAM1791 RNA, VGAM1792 RNA, VGAM1793 RNA, VGAM1794 RNA, VGAM1795 RNA and VGAM1796 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA and VGAM7 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42642] VGAM1790 RNA, herein schematically represented by

VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1790 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1790 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1790 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42643] VGAM1791 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1791 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1791 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1791 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42644] VGAM1792 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1792 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1792 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1792 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42645] VGAM1793 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1793 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1793 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1793 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of

Fig. 1.

[42646] VGAM1794 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1794 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1794 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1794 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[42647] VGAM1795 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM1795 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1795 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM1795 host target protein, herein schematically

represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[42648] VGAM1796 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM1796 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1796 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM1796 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[42649] It is appreciated that a function of VGR3124 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3124 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3124 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in

the operon-like cluster of VGR3124 gene: VGAM1790 host target protein, VGAM1791 host target protein, VGAM1792 host target protein, VGAM1793 host target protein, VGAM1794 host target protein, VGAM1795 host target protein and VGAM1796 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1790, VGAM1791, VGAM1792, VGAM1793, VGAM1794, VGAM1795 and VGAM1796

[42650] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3125(VGR3125) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42651] VGR3125 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3125 gene was detected is described hereinabove with reference to Figs.

6-15.

[42652] VGR3125 gene encodes VGR3125 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42653] VGR3125 precursor RNA folds spatially, forming VGR3125 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3125 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3125 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[42654] VGR3125 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate VGAM precursor RNAs, VGAM1797 precursor RNA and VGAM1798 precursor RNA, herein schematically represented by VGAM1 PRECURSOR and VGAM2 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECUR-

SOR RNA of Fig. 8.

[42655] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1797 RNA and VGAM1798 RNA respectively, herein schematically represented by VGAM1 RNA and VGAM2 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42656] VGAM1797 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1797 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1797 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1797 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42657] VGAM1798 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1798 host

target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1798 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1798 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42658] It is appreciated that a function of VGR3125 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3125 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3125 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3125 gene: VGAM1797 host target protein and VGAM1798 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN and VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated

hereinabove with reference to VGAM1797 and VGAM1798

[42659] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3126(VGR3126) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42660] VGR3126 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3126 gene was detected is described hereinabove with reference to Figs. 6–15.

[42661] VGR3126 gene encodes VGR3126 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42662] VGR3126 precursor RNA folds spatially, forming VGR3126 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3126 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to

the fact that the nucleotide sequence of VGR3126 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[42663] VGR3126 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM1799 precursor RNA, VGAM1800 precursor RNA, VGAM1801 precursor RNA, VGAM1802 precursor RNA, VGAM1803 precursor RNA, VGAM1804 precursor RNA, VGAM1805 precursor RNA and VGAM1806 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42664] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1799 RNA, VGAM1800 RNA, VGAM1801 RNA, VGAM1802 RNA,

VGAM1803 RNA, VGAM1804 RNA, VGAM1805 RNA and VGAM1806 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42665] VGAM1799 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1799 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1799 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1799 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42666] VGAM1800 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1800 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1800 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1800 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42667] VGAM1801 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1801 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1801 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1801 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42668] VGAM1802 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1802 host target RNA, herein schematically represented by VGAM4

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1802 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1802 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[42669] VGAM1803 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1803 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1803 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1803 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[42670] VGAM1804 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM1804 host

target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1804 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM1804 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[42671] VGAM1805 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM1805 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1805 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM1805 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[42672] VGAM1806 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding

site located in an untranslated region of VGAM1806 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1806 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM1806 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[42673] It is appreciated that a function of VGR3126 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3126 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3126 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3126 gene: VGAM1799 host target protein, VGAM1800 host target protein, VGAM1801 host target protein, VGAM1802 host target protein, VGAM1803 host target protein, VGAM1804 host

target protein, VGAM1805 host target protein and VGAM1806 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1799, VGAM1800, VGAM1801, VGAM1802, VGAM1803, VGAM1804, VGAM1805 and VGAM1806

[42674] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3127(VGR3127) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42675] VGR3127 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3127 gene was detected is described hereinabove with reference to Figs. 6–15.

[42676] VGR3127 gene encodes VGR3127 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typi-

cally several hundred nucleotides long.

[42677] VGR3127 precursor RNA folds spatially, forming VGR3127 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3127 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3127 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[42678] VGR3127 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate VGAM precursor RNAs, VGAM1807 precursor RNA, VGAM1808 precursor RNA and VGAM1809 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR and VGAM3 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42679] The above mentioned VGAM precursor RNAs are diced by

DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1807 RNA, VGAM1808 RNA and VGAM1809 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA and VGAM3 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42680] VGAM1807 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1807 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1807 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1807 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42681] VGAM1808 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1808 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1808 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1808 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42682] VGAM1809 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1809 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1809 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1809 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42683] It is appreciated that a function of VGR3127 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3127 gene include

diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3127 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3127 gene: VGAM1807 host target protein, VGAM1808 host target protein and VGAM1809 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1807, VGAM1808 and VGAM1809

[42684] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3128(VGR3128) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42685] VGR3128 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3128 gene was

detected is described hereinabove with reference to Figs. 6–15.

[42686] VGR3128 gene encodes VGR3128 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42687] VGR3128 precursor RNA folds spatially, forming VGR3128 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3128 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3128 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[42688] VGR3128 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 6 separate VGAM precursor RNAs, VGAM1810 precursor RNA, VGAM1811 precursor RNA, VGAM1812 precursor RNA, VGAM1813 precursor RNA, VGAM1814 precursor RNA and VGAM1815 precursor RNA, herein schematically represented by

VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR and VGAM6 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42689] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1810 RNA, VGAM1811 RNA, VGAM1812 RNA, VGAM1813 RNA, VGAM1814 RNA and VGAM1815 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA and VGAM6 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42690] VGAM1810 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1810 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1810 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA

into VGAM1810 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42691] VGAM1811 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1811 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1811 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1811 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42692] VGAM1812 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1812 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1812 host target RNA, herein

schematically represented by VGAM3 HOST TARGET RNA into VGAM1812 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42693] VGAM1813 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1813 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1813 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1813 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[42694] VGAM1814 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1814 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby in-

hibiting translation of VGAM1814 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1814 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[42695] VGAM1815 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM1815 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1815 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM1815 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[42696] It is appreciated that a function of VGR3128 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3128 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3128

gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3128 gene: VGAM1810 host target protein, VGAM1811 host target protein, VGAM1812 host target protein, VGAM1813 host target protein, VGAM1814 host target protein and VGAM1815 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1810, VGAM1811, VGAM1812, VGAM1813, VGAM1814 and VGAM1815

[42697] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3129(VGR3129) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42698] VGR3129 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding,

RNA viral gene. The method by which VGR3129 gene was detected is described hereinabove with reference to Figs. 6–15.

[42699] VGR3129 gene encodes VGR3129 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42700] VGR3129 precursor RNA folds spatially, forming VGR3129 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3129 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3129 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[42701] VGR3129 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM1816 precursor RNA, VGAM1817 precursor RNA, VGAM1818 precursor RNA, VGAM1819 precursor RNA, VGAM1820 precursor RNA, VGAM1821 pre–

cursor RNA, VGAM1822 precursor RNA and VGAM1823 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42702] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1816 RNA, VGAM1817 RNA, VGAM1818 RNA, VGAM1819 RNA, VGAM1820 RNA, VGAM1821 RNA, VGAM1822 RNA and VGAM1823 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42703] VGAM1816 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1816 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1816 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1816 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42704] VGAM1817 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1817 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1817 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1817 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42705] VGAM1818 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1818 host target RNA, herein schematically represented by VGAM3

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1818 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1818 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42706] VGAM1819 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1819 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1819 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1819 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[42707] VGAM1820 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1820 host

target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1820 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1820 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[42708] VGAM1821 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM1821 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1821 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM1821 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[42709] VGAM1822 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding

site located in an untranslated region of VGAM1822 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1822 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM1822 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[42710] VGAM1823 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM1823 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1823 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM1823 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[42711] It is appreciated that a function of VGR3129 gene, herein

designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3129 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3129 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3129 gene: VGAM1816 host target protein, VGAM1817 host target protein, VGAM1818 host target protein, VGAM1819 host target protein, VGAM1820 host target protein, VGAM1821 host target protein, VGAM1822 host target protein and VGAM1823 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1816, VGAM1817, VGAM1818, VGAM1819, VGAM1820, VGAM1821, VGAM1822 and VGAM1823

[42712] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3130(VGR3130) viral

gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42713] VGR3130 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3130 gene was detected is described hereinabove with reference to Figs. 6–15.

[42714] VGR3130 gene encodes VGR3130 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42715] VGR3130 precursor RNA folds spatially, forming VGR3130 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3130 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3130 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the

second half thereof, as is well known in the art.

[42716] VGR3130 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate VGAM precursor RNAs, VGAM1824 precursor RNA, VGAM1825 precursor RNA and VGAM1826 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR and VGAM3 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42717] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1824 RNA, VGAM1825 RNA and VGAM1826 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA and VGAM3 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42718] VGAM1824 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1824 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1824 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1824 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42719] VGAM1825 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1825 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1825 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1825 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42720] VGAM1826 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1826 host target RNA, herein schematically represented by VGAM3

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1826 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1826 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42721] It is appreciated that a function of VGR3130 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3130 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3130 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3130 gene: VGAM1824 host target protein, VGAM1825 host target protein and VGAM1826 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with

reference to VGAM1824, VGAM1825 and VGAM1826

[42722] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3131(VGR3131) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42723] VGR3131 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3131 gene was detected is described hereinabove with reference to Figs. 6-15.

[42724] VGR3131 gene encodes VGR3131 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42725] VGR3131 precursor RNA folds spatially, forming VGR3131 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3131 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to

the fact that the nucleotide sequence of VGR3131 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[42726] VGR3131 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate VGAM precursor RNAs, VGAM1827 precursor RNA, VGAM1828 precursor RNA and VGAM1829 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR and VGAM3 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42727] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1827 RNA, VGAM1828 RNA and VGAM1829 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA and VGAM3 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42728] VGAM1827 RNA, herein schematically represented by

VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1827 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1827 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1827 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42729] VGAM1828 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1828 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1828 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1828 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42730] VGAM1829 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1829 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1829 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1829 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42731] It is appreciated that a function of VGR3131 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3131 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3131 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3131 gene: VGAM1827 host target protein, VGAM1828 host target protein and

VGAM1829 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1827, VGAM1828 and VGAM1829

[42732] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3132(VGR3132) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42733] VGR3132 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3132 gene was detected is described hereinabove with reference to Figs. 6-15.

[42734] VGR3132 gene encodes VGR3132 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42735] VGR3132 precursor RNA folds spatially, forming VGR3132 folded precursor RNA, herein designated VGR FOLDED

PRECURSOR RNA. It is appreciated that VGR3132 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3132 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[42736] VGR3132 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 5 separate VGAM precursor RNAs, VGAM1830 precursor RNA, VGAM1831 precursor RNA, VGAM1832 precursor RNA, VGAM1833 precursor RNA and VGAM1834 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR and VGAM5 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42737] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1830

RNA, VGAM1831 RNA, VGAM1832 RNA, VGAM1833 RNA and VGAM1834 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA and VGAM5 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42738] VGAM1830 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1830 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1830 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1830 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42739] VGAM1831 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1831 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1831 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1831 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42740] VGAM1832 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1832 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1832 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1832 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42741] VGAM1833 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1833 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1833 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1833 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[42742] VGAM1834 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1834 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1834 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1834 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[42743] It is appreciated that a function of VGR3132 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3132 gene include

diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3132 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3132 gene: VGAM1830 host target protein, VGAM1831 host target protein, VGAM1832 host target protein, VGAM1833 host target protein and VGAM1834 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1830, VGAM1831, VGAM1832, VGAM1833 and VGAM1834

[42744] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3133(VGR3133) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42745] VGR3133 gene, herein designated VGR GENE, is a novel

bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3133 gene was detected is described hereinabove with reference to Figs. 6–15.

[42746] VGR3133 gene encodes VGR3133 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42747] VGR3133 precursor RNA folds spatially, forming VGR3133 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3133 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3133 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[42748] VGR3133 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 5 separate VGAM precursor RNAs, VGAM1835 precursor RNA, VGAM1836 precursor RNA, VGAM1837 precursor RNA, VGAM1838 pre–

cursor RNA and VGAM1839 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR and VGAM5 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42749] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1835 RNA, VGAM1836 RNA, VGAM1837 RNA, VGAM1838 RNA and VGAM1839 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA and VGAM5 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42750] VGAM1835 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1835 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1835 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA

into VGAM1835 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42751] VGAM1836 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1836 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1836 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1836 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42752] VGAM1837 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1837 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1837 host target RNA, herein

schematically represented by VGAM3 HOST TARGET RNA into VGAM1837 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42753] VGAM1838 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1838 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1838 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1838 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[42754] VGAM1839 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1839 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby in-

hibiting translation of VGAM1839 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1839 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[42755] It is appreciated that a function of VGR3133 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3133 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3133 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3133 gene: VGAM1835 host target protein, VGAM1836 host target protein, VGAM1837 host target protein, VGAM1838 host target protein and VGAM1839 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1835, VGAM1836, VGAM1837, VGAM1838 and VGAM1839

[42756] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3134(VGR3134) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42757] VGR3134 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3134 gene was detected is described hereinabove with reference to Figs. 6–15.

[42758] VGR3134 gene encodes VGR3134 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42759] VGR3134 precursor RNA folds spatially, forming VGR3134 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3134 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3134 precursor

sor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[42760] VGR3134 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate VGAM precursor RNAs, VGAM1840 precursor RNA and VGAM1841 precursor RNA, herein schematically represented by VGAM1 PRECURSOR and VGAM2 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42761] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1840 RNA and VGAM1841 RNA respectively, herein schematically represented by VGAM1 RNA and VGAM2 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42762] VGAM1840 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1840 host

target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1840 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1840 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42763] VGAM1841 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1841 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1841 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1841 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42764] It is appreciated that a function of VGR3134 gene, herein designated VGR GENE, is inhibition of expression of host

target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3134 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3134 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3134 gene: VGAM1840 host target protein and VGAM1841 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN and VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1840 and VGAM1841

[42765] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3135(VGR3135) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42766] VGR3135 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding,

RNA viral gene. The method by which VGR3135 gene was detected is described hereinabove with reference to Figs. 6–15.

[42767] VGR3135 gene encodes VGR3135 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42768] VGR3135 precursor RNA folds spatially, forming VGR3135 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3135 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3135 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[42769] VGR3135 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 5 separate VGAM precursor RNAs, VGAM1842 precursor RNA, VGAM1843 precursor RNA, VGAM1844 precursor RNA, VGAM1845 precursor RNA and VGAM1846 precursor RNA, herein

schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR and VGAM5 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42770] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1842 RNA, VGAM1843 RNA, VGAM1844 RNA, VGAM1845 RNA and VGAM1846 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA and VGAM5 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42771] VGAM1842 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1842 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1842 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1842 host target protein, herein schematically

represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42772] VGAM1843 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1843 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1843 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1843 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42773] VGAM1844 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1844 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1844 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA

into VGAM1844 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42774] VGAM1845 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1845 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1845 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1845 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[42775] VGAM1846 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1846 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1846 host target RNA, herein

schematically represented by VGAM5 HOST TARGET RNA into VGAM1846 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[42776] It is appreciated that a function of VGR3135 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3135 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3135 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3135 gene: VGAM1842 host target protein, VGAM1843 host target protein, VGAM1844 host target protein, VGAM1845 host target protein and VGAM1846 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1842, VGAM1843, VGAM1844, VGAM1845 and VGAM1846

[42777] Fig. 9 further provides a conceptual description of novel

bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3136(VGR3136) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42778] VGR3136 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3136 gene was detected is described hereinabove with reference to Figs. 6–15.

[42779] VGR3136 gene encodes VGR3136 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42780] VGR3136 precursor RNA folds spatially, forming VGR3136 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3136 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3136 precursor RNA comprises a plurality of segments, the first half

of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[42781] VGR3136 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 7 separate VGAM precursor RNAs, VGAM1847 precursor RNA, VGAM1848 precursor RNA, VGAM1849 precursor RNA, VGAM1850 precursor RNA, VGAM1851 precursor RNA, VGAM1852 precursor RNA and VGAM1853 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR and VGAM7 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42782] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1847 RNA, VGAM1848 RNA, VGAM1849 RNA, VGAM1850 RNA, VGAM1851 RNA, VGAM1852 RNA and VGAM1853 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5

RNA, VGAM6 RNA and VGAM7 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42783] VGAM1847 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1847 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1847 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1847 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42784] VGAM1848 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1848 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1848 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA

into VGAM1848 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42785] VGAM1849 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1849 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1849 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1849 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42786] VGAM1850 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1850 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1850 host target RNA, herein

schematically represented by VGAM4 HOST TARGET RNA into VGAM1850 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[42787] VGAM1851 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1851 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1851 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1851 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[42788] VGAM1852 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM1852 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby in-

hibiting translation of VGAM1852 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM1852 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[42789] VGAM1853 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM1853 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1853 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM1853 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[42790] It is appreciated that a function of VGR3136 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3136 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3136

gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3136 gene: VGAM1847 host target protein, VGAM1848 host target protein, VGAM1849 host target protein, VGAM1850 host target protein, VGAM1851 host target protein, VGAM1852 host target protein and VGAM1853 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1847, VGAM1848, VGAM1849, VGAM1850, VGAM1851, VGAM1852 and VGAM1853

[42791] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3137(VGR3137) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42792] VGR3137 gene, herein designated VGR GENE, is a novel

bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3137 gene was detected is described hereinabove with reference to Figs. 6–15.

[42793] VGR3137 gene encodes VGR3137 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42794] VGR3137 precursor RNA folds spatially, forming VGR3137 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3137 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3137 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[42795] VGR3137 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate VGAM precursor RNAs, VGAM1854 precursor RNA and VGAM1855 precursor RNA, herein schematically represented by

VGAM1 PRECURSOR and VGAM2 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42796] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1854 RNA and VGAM1855 RNA respectively, herein schematically represented by VGAM1 RNA and VGAM2 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42797] VGAM1854 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1854 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1854 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1854 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42798] VGAM1855 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1855 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1855 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1855 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42799] It is appreciated that a function of VGR3137 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3137 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3137 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3137 gene: VGAM1854 host target protein and VGAM1855 host target protein,

herein schematically represented by VGAM1 HOST TARGET PROTEIN and VGAM HOST TARGET PROTEIN respectively.

The function of these host target genes is elaborated hereinabove with reference to VGAM1854 and VGAM1855

[42800] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3138(VGR3138) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42801] VGR3138 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3138 gene was detected is described hereinabove with reference to Figs. 6–15.

[42802] VGR3138 gene encodes VGR3138 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42803] VGR3138 precursor RNA folds spatially, forming VGR3138 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3138 folded

precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3138 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[42804] VGR3138 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 6 separate VGAM precursor RNAs, VGAM1856 precursor RNA, VGAM1857 precursor RNA, VGAM1858 precursor RNA, VGAM1859 precursor RNA, VGAM1860 precursor RNA and VGAM1861 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR and VGAM6 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42805] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1856

RNA, VGAM1857 RNA, VGAM1858 RNA, VGAM1859 RNA, VGAM1860 RNA and VGAM1861 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA and VGAM6 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42806] VGAM1856 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1856 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1856 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1856 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42807] VGAM1857 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1857 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1857 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1857 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42808] VGAM1858 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1858 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1858 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1858 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42809] VGAM1859 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1859 host target RNA, herein schematically represented by VGAM4

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1859 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1859 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[42810] VGAM1860 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1860 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1860 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1860 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[42811] VGAM1861 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM1861 host

target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1861 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM1861 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[42812] It is appreciated that a function of VGR3138 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3138 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3138 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3138 gene: VGAM1856 host target protein, VGAM1857 host target protein, VGAM1858 host target protein, VGAM1859 host target protein, VGAM1860 host target protein and VGAM1861 host target protein, herein schematically represented by

VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1856, VGAM1857, VGAM1858, VGAM1859, VGAM1860 and VGAM1861

[42813] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3139(VGR3139) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42814] VGR3139 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3139 gene was detected is described hereinabove with reference to Figs. 6-15.

[42815] VGR3139 gene encodes VGR3139 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42816] VGR3139 precursor RNA folds spatially, forming VGR3139 folded precursor RNA, herein designated VGR FOLDED

PRECURSOR RNA. It is appreciated that VGR3139 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3139 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[42817] VGR3139 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 6 separate VGAM precursor RNAs, VGAM1863 precursor RNA, VGAM1864 precursor RNA, VGAM1865 precursor RNA, VGAM1866 precursor RNA, VGAM1867 precursor RNA and VGAM1868 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR and VGAM6 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42818] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1863 RNA, VGAM1864 RNA, VGAM1865 RNA, VGAM1866 RNA, VGAM1867 RNA and VGAM1868 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA and VGAM6 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42819] VGAM1863 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding

site located in an untranslated region of VGAM1863 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1863 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1863 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42820] VGAM1864 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1864 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1864 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1864 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42821] VGAM1865 RNA, herein schematically represented by

VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1865 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1865 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1865 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42822] VGAM1866 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1866 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1866 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1866 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[42823] VGAM1867 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1867 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1867 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1867 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[42824] VGAM1868 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM1868 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1868 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM1868 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of

Fig. 1.

[42825] It is appreciated that a function of VGR3139 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3139 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3139 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3139 gene: VGAM1863 host target protein, VGAM1864 host target protein, VGAM1865 host target protein, VGAM1866 host target protein, VGAM1867 host target protein and VGAM1868 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1863, VGAM1864, VGAM1865, VGAM1866, VGAM1867 and VGAM1868

[42826] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3140(VGR3140) viral

gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42827] VGR3140 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3140 gene was detected is described hereinabove with reference to Figs. 6–15.

[42828] VGR3140 gene encodes VGR3140 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42829] VGR3140 precursor RNA folds spatially, forming VGR3140 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3140 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3140 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the

second half thereof, as is well known in the art.

[42830] VGR3140 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM1870 precursor RNA, VGAM1871 precursor RNA, VGAM1872 precursor RNA, VGAM1873 precursor RNA, VGAM1874 precursor RNA, VGAM1875 precursor RNA, VGAM1876 precursor RNA and VGAM1877 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42831] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1870 RNA, VGAM1871 RNA, VGAM1872 RNA, VGAM1873 RNA, VGAM1874 RNA, VGAM1875 RNA, VGAM1876 RNA and VGAM1877 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8

RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42832] VGAM1870 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1870 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1870 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1870 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42833] VGAM1871 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1871 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1871 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA

into VGAM1871 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42834] VGAM1872 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1872 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1872 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1872 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42835] VGAM1873 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1873 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1873 host target RNA, herein

schematically represented by VGAM4 HOST TARGET RNA into VGAM1873 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[42836] VGAM1874 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1874 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1874 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1874 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[42837] VGAM1875 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM1875 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby in-

hibiting translation of VGAM1875 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM1875 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[42838] VGAM1876 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM1876 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1876 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM1876 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[42839] VGAM1877 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM1877 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1877 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM1877 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[42840] It is appreciated that a function of VGR3140 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3140 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3140 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3140 gene: VGAM1870 host target protein, VGAM1871 host target protein, VGAM1872 host target protein, VGAM1873 host target protein, VGAM1874 host target protein, VGAM1875 host target protein, VGAM1876 host target protein and VGAM1877 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function

of these host target genes is elaborated hereinabove with reference to VGAM1870, VGAM1871, VGAM1872, VGAM1873, VGAM1874, VGAM1875, VGAM1876 and VGAM1877

[42841] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3141(VGR3141) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42842] VGR3141 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3141 gene was detected is described hereinabove with reference to Figs. 6–15.

[42843] VGR3141 gene encodes VGR3141 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42844] VGR3141 precursor RNA folds spatially, forming VGR3141 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3141 folded

precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3141 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[42845] VGR3141 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 7 separate VGAM precursor RNAs, VGAM1878 precursor RNA, VGAM1879 precursor RNA, VGAM1880 precursor RNA, VGAM1881 precursor RNA, VGAM1882 precursor RNA, VGAM1883 precursor RNA and VGAM1884 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR and VGAM7 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42846] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA

segments of about 22 nucleotides in length, VGAM1878 RNA, VGAM1879 RNA, VGAM1880 RNA, VGAM1881 RNA, VGAM1882 RNA, VGAM1883 RNA and VGAM1884 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA and VGAM7 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42847] VGAM1878 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1878 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1878 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1878 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42848] VGAM1879 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1879 host target RNA, herein schematically represented by VGAM2

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1879 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1879 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42849] VGAM1880 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1880 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1880 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1880 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42850] VGAM1881 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1881 host

target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1881 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1881 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[42851] VGAM1882 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1882 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1882 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1882 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[42852] VGAM1883 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding

site located in an untranslated region of VGAM1883 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1883 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM1883 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[42853] VGAM1884 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM1884 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1884 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM1884 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[42854] It is appreciated that a function of VGR3141 gene, herein

designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3141 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3141 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3141 gene: VGAM1878 host target protein, VGAM1879 host target protein, VGAM1880 host target protein, VGAM1881 host target protein, VGAM1882 host target protein, VGAM1883 host target protein and VGAM1884 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1878, VGAM1879, VGAM1880, VGAM1881, VGAM1882, VGAM1883 and VGAM1884

[42855] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3142(VGR3142) viral gene, which encodes an operon-like cluster of novel viral

micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42856] VGR3142 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3142 gene was detected is described hereinabove with reference to Figs. 6–15.

[42857] VGR3142 gene encodes VGR3142 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42858] VGR3142 precursor RNA folds spatially, forming VGR3142 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3142 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3142 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[42859] VGR3142 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 7 separate VGAM precursor RNAs, VGAM1885 precursor RNA, VGAM1886 precursor RNA, VGAM1887 precursor RNA, VGAM1888 precursor RNA, VGAM1889 precursor RNA, VGAM1890 precursor RNA and VGAM1891 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR and VGAM7 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42860] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1885 RNA, VGAM1886 RNA, VGAM1887 RNA, VGAM1888 RNA, VGAM1889 RNA, VGAM1890 RNA and VGAM1891 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA and VGAM7 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42861] VGAM1885 RNA, herein schematically represented by

VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1885 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1885 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1885 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42862] VGAM1886 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1886 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1886 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1886 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42863] VGAM1887 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1887 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1887 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1887 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42864] VGAM1888 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1888 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1888 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1888 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of

Fig. 1.

[42865] VGAM1889 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1889 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1889 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1889 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[42866] VGAM1890 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM1890 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1890 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM1890 host target protein, herein schematically

represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[42867] VGAM1891 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM1891 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1891 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM1891 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[42868] It is appreciated that a function of VGR3142 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3142 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3142 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in

the operon-like cluster of VGR3142 gene: VGAM1885 host target protein, VGAM1886 host target protein, VGAM1887 host target protein, VGAM1888 host target protein, VGAM1889 host target protein, VGAM1890 host target protein and VGAM1891 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1885, VGAM1886, VGAM1887, VGAM1888, VGAM1889, VGAM1890 and VGAM1891

[42869] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3143(VGR3143) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42870] VGR3143 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3143 gene was detected is described hereinabove with reference to Figs.

6-15.

[42871] VGR3143 gene encodes VGR3143 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42872] VGR3143 precursor RNA folds spatially, forming VGR3143 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3143 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3143 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[42873] VGR3143 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate VGAM precursor RNAs, VGAM1892 precursor RNA and VGAM1893 precursor RNA, herein schematically represented by VGAM1 PRECURSOR and VGAM2 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECUR-

SOR RNA of Fig. 8.

[42874] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1892 RNA and VGAM1893 RNA respectively, herein schematically represented by VGAM1 RNA and VGAM2 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42875] VGAM1892 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1892 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1892 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1892 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42876] VGAM1893 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1893 host

target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1893 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1893 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42877] It is appreciated that a function of VGR3143 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3143 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3143 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3143 gene: VGAM1892 host target protein and VGAM1893 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN and VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated

hereinabove with reference to VGAM1892 and VGAM1893

[42878] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3144(VGR3144) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42879] VGR3144 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3144 gene was detected is described hereinabove with reference to Figs. 6–15.

[42880] VGR3144 gene encodes VGR3144 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42881] VGR3144 precursor RNA folds spatially, forming VGR3144 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3144 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to

the fact that the nucleotide sequence of VGR3144 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[42882] VGR3144 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM1894 precursor RNA, VGAM1895 precursor RNA, VGAM1896 precursor RNA, VGAM1897 precursor RNA, VGAM1898 precursor RNA, VGAM1899 precursor RNA, VGAM1900 precursor RNA and VGAM1901 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42883] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1894 RNA, VGAM1895 RNA, VGAM1896 RNA, VGAM1897 RNA,

VGAM1898 RNA, VGAM1899 RNA, VGAM1900 RNA and VGAM1901 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42884] VGAM1894 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1894 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1894 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1894 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42885] VGAM1895 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1895 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1895 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1895 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42886] VGAM1896 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1896 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1896 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1896 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42887] VGAM1897 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1897 host target RNA, herein schematically represented by VGAM4

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1897 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1897 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[42888] VGAM1898 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1898 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1898 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1898 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[42889] VGAM1899 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM1899 host

target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1899 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM1899 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[42890] VGAM1900 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM1900 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1900 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM1900 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[42891] VGAM1901 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding

site located in an untranslated region of VGAM1901 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1901 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM1901 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[42892] It is appreciated that a function of VGR3144 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3144 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3144 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3144 gene: VGAM1894 host target protein, VGAM1895 host target protein, VGAM1896 host target protein, VGAM1897 host target protein, VGAM1898 host target protein, VGAM1899 host

target protein, VGAM1900 host target protein and VGAM1901 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1894, VGAM1895, VGAM1896, VGAM1897, VGAM1898, VGAM1899, VGAM1900 and VGAM1901

[42893] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3145(VGR3145) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42894] VGR3145 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3145 gene was detected is described hereinabove with reference to Figs. 6–15.

[42895] VGR3145 gene encodes VGR3145 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typi-

cally several hundred nucleotides long.

[42896] VGR3145 precursor RNA folds spatially, forming VGR3145 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3145 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3145 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[42897] VGR3145 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate VGAM precursor RNAs, VGAM1902 precursor RNA, VGAM1903 precursor RNA and VGAM1904 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR and VGAM3 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42898] The above mentioned VGAM precursor RNAs are diced by

DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1902 RNA, VGAM1903 RNA and VGAM1904 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA and VGAM3 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42899] VGAM1902 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1902 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1902 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1902 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42900] VGAM1903 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1903 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1903 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1903 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42901] VGAM1904 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1904 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1904 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1904 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42902] It is appreciated that a function of VGR3145 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3145 gene include

diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3145 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3145 gene: VGAM1902 host target protein, VGAM1903 host target protein and VGAM1904 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1902, VGAM1903 and VGAM1904

[42903] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3146(VGR3146) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42904] VGR3146 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3146 gene was

detected is described hereinabove with reference to Figs. 6–15.

[42905] VGR3146 gene encodes VGR3146 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42906] VGR3146 precursor RNA folds spatially, forming VGR3146 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3146 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3146 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[42907] VGR3146 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate VGAM precursor RNAs, VGAM1905 precursor RNA and VGAM1906 precursor RNA, herein schematically represented by VGAM1 PRECURSOR and VGAM2 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin

shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42908] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1905 RNA and VGAM1906 RNA respectively, herein schematically represented by VGAM1 RNA and VGAM2 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42909] VGAM1905 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1905 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1905 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1905 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42910] VGAM1906 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding

site located in an untranslated region of VGAM1906 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1906 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1906 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42911] It is appreciated that a function of VGR3146 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3146 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3146 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3146 gene: VGAM1905 host target protein and VGAM1906 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN and VGAM HOST TARGET PROTEIN respectively.

The function of these host target genes is elaborated hereinabove with reference to VGAM1905 and VGAM1906

[42912] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3147(VGR3147) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42913] VGR3147 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3147 gene was detected is described hereinabove with reference to Figs. 6–15.

[42914] VGR3147 gene encodes VGR3147 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42915] VGR3147 precursor RNA folds spatially, forming VGR3147 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3147 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art

as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3147 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[42916] VGR3147 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 7 separate VGAM precursor RNAs, VGAM1907 precursor RNA, VGAM1908 precursor RNA, VGAM1909 precursor RNA, VGAM1910 precursor RNA, VGAM1911 precursor RNA, VGAM1912 precursor RNA and VGAM1913 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR and VGAM7 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42917] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1907 RNA, VGAM1908 RNA, VGAM1909 RNA, VGAM1910 RNA,

VGAM1911 RNA, VGAM1912 RNA and VGAM1913 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA and VGAM7 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42918] VGAM1907 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1907 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1907 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1907 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42919] VGAM1908 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1908 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1908 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1908 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42920] VGAM1909 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1909 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1909 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1909 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42921] VGAM1910 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1910 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1910 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1910 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[42922] VGAM1911 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1911 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1911 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1911 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[42923] VGAM1912 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM1912 host target RNA, herein schematically represented by VGAM6

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1912 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM1912 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[42924] VGAM1913 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM1913 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1913 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM1913 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[42925] It is appreciated that a function of VGR3147 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attack–

ing a host. Accordingly, utilities of VGR3147 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3147 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3147 gene: VGAM1907 host target protein, VGAM1908 host target protein, VGAM1909 host target protein, VGAM1910 host target protein, VGAM1911 host target protein, VGAM1912 host target protein and VGAM1913 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1907, VGAM1908, VGAM1909, VGAM1910, VGAM1911, VGAM1912 and VGAM1913

[42926] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3148(VGR3148) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function

and utility of which at least one host target gene is known in the art.

[42927] VGR3148 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3148 gene was detected is described hereinabove with reference to Figs. 6–15.

[42928] VGR3148 gene encodes VGR3148 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42929] VGR3148 precursor RNA folds spatially, forming VGR3148 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3148 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3148 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[42930] VGR3148 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellu–

lar enzymatic activity into at least 2 separate VGAM precursor RNAs, VGAM1914 precursor RNA and VGAM1915 precursor RNA, herein schematically represented by VGAM1 PRECURSOR and VGAM2 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42931] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1914 RNA and VGAM1915 RNA respectively, herein schematically represented by VGAM1 RNA and VGAM2 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42932] VGAM1914 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1914 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1914 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA

into VGAM1914 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42933] VGAM1915 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1915 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1915 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1915 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42934] It is appreciated that a function of VGR3148 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3148 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3148 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target

genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3148 gene: VGAM1914 host target protein and VGAM1915 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN and VGAM HOST TARGET PROTEIN respectively.

The function of these host target genes is elaborated hereinabove with reference to VGAM1914 and VGAM1915

[42935] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3149(VGR3149) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42936] VGR3149 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3149 gene was detected is described hereinabove with reference to Figs. 6-15.

[42937] VGR3149 gene encodes VGR3149 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42938] VGR3149 precursor RNA folds spatially, forming VGR3149 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3149 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3149 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[42939] VGR3149 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate VGAM precursor RNAs, VGAM1916 precursor RNA, VGAM1917 precursor RNA and VGAM1918 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR and VGAM3 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42940] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA

segments of about 22 nucleotides in length, VGAM1916 RNA, VGAM1917 RNA and VGAM1918 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA and VGAM3 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42941] VGAM1916 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1916 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1916 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1916 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42942] VGAM1917 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1917 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1917 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1917 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42943] VGAM1918 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1918 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1918 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1918 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42944] It is appreciated that a function of VGR3149 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3149 gene include diagnosis, prevention and treatment of viral infection by .

Specific functions, and accordingly utilities, of VGR3149 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3149 gene: VGAM1916 host target protein, VGAM1917 host target protein and VGAM1918 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1916, VGAM1917 and VGAM1918

[42945] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3150(VGR3150) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42946] VGR3150 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3150 gene was detected is described hereinabove with reference to Figs.

6-15.

[42947] VGR3150 gene encodes VGR3150 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42948] VGR3150 precursor RNA folds spatially, forming VGR3150 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3150 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3150 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[42949] VGR3150 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 7 separate VGAM precursor RNAs, VGAM1920 precursor RNA, VGAM1921 precursor RNA, VGAM1922 precursor RNA, VGAM1923 precursor RNA, VGAM1924 precursor RNA, VGAM1925 precursor RNA and VGAM1926 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2

PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR and VGAM7 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42950] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1920 RNA, VGAM1921 RNA, VGAM1922 RNA, VGAM1923 RNA, VGAM1924 RNA, VGAM1925 RNA and VGAM1926 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA and VGAM7 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42951] VGAM1920 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1920 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1920 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA

into VGAM1920 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42952] VGAM1921 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1921 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1921 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1921 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42953] VGAM1922 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1922 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1922 host target RNA, herein

schematically represented by VGAM3 HOST TARGET RNA into VGAM1922 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42954] VGAM1923 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1923 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1923 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1923 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[42955] VGAM1924 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1924 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby in-

hibiting translation of VGAM1924 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1924 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[42956] VGAM1925 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM1925 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1925 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM1925 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[42957] VGAM1926 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM1926 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1926 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM1926 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[42958] It is appreciated that a function of VGR3150 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3150 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3150 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3150 gene: VGAM1920 host target protein, VGAM1921 host target protein, VGAM1922 host target protein, VGAM1923 host target protein, VGAM1924 host target protein, VGAM1925 host target protein and VGAM1926 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated

hereinabove with reference to VGAM1920, VGAM1921, VGAM1922, VGAM1923, VGAM1924, VGAM1925 and VGAM1926

[42959] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3151(VGR3151) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42960] VGR3151 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3151 gene was detected is described hereinabove with reference to Figs. 6–15.

[42961] VGR3151 gene encodes VGR3151 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42962] VGR3151 precursor RNA folds spatially, forming VGR3151 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3151 folded precursor RNA, herein designated VGR FOLDED PRECUR–

SOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3151 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[42963] VGR3151 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate VGAM precursor RNAs, VGAM1927 precursor RNA and VGAM1928 precursor RNA, herein schematically represented by VGAM1 PRECURSOR and VGAM2 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42964] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1927 RNA and VGAM1928 RNA respectively, herein schematically represented by VGAM1 RNA and VGAM2 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42965] VGAM1927 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1927 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1927 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1927 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42966] VGAM1928 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1928 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1928 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1928 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of

Fig. 1.

[42967] It is appreciated that a function of VGR3151 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3151 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3151 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3151 gene: VGAM1927 host target protein and VGAM1928 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN and VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1927 and VGAM1928

[42968] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3152(VGR3152) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known

in the art.

[42969] VGR3152 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3152 gene was detected is described hereinabove with reference to Figs. 6–15.

[42970] VGR3152 gene encodes VGR3152 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42971] VGR3152 precursor RNA folds spatially, forming VGR3152 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3152 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3152 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[42972] VGR3152 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 7 separate VGAM pre–

cursor RNAs, VGAM1930 precursor RNA, VGAM1931 precursor RNA, VGAM1932 precursor RNA, VGAM1933 precursor RNA, VGAM1934 precursor RNA, VGAM1935 precursor RNA and VGAM1936 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR and VGAM7 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42973] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1930 RNA, VGAM1931 RNA, VGAM1932 RNA, VGAM1933 RNA, VGAM1934 RNA, VGAM1935 RNA and VGAM1936 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA and VGAM7 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42974] VGAM1930 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1930 host target RNA, herein schematically represented by VGAM1

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1930 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1930 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42975] VGAM1931 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1931 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1931 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1931 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42976] VGAM1932 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1932 host

target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1932 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1932 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[42977] VGAM1933 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1933 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1933 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1933 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[42978] VGAM1934 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding

site located in an untranslated region of VGAM1934 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1934 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1934 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[42979] VGAM1935 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM1935 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1935 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM1935 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[42980] VGAM1936 RNA, herein schematically represented by

VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM1936 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1936 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM1936 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[42981] It is appreciated that a function of VGR3152 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3152 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3152 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3152 gene: VGAM1930 host target protein, VGAM1931 host target protein, VGAM1932 host target protein, VGAM1933 host target

protein, VGAM1934 host target protein, VGAM1935 host target protein and VGAM1936 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1930, VGAM1931, VGAM1932, VGAM1933, VGAM1934, VGAM1935 and VGAM1936

[42982] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3153(VGR3153) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42983] VGR3153 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3153 gene was detected is described hereinabove with reference to Figs. 6–15.

[42984] VGR3153 gene encodes VGR3153 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typi-

cally several hundred nucleotides long.

[42985] VGR3153 precursor RNA folds spatially, forming VGR3153 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3153 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3153 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[42986] VGR3153 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate VGAM precursor RNAs, VGAM1937 precursor RNA and VGAM1938 precursor RNA, herein schematically represented by VGAM1 PRECURSOR and VGAM2 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42987] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA

segments of about 22 nucleotides in length, VGAM1937 RNA and VGAM1938 RNA respectively, herein schematically represented by VGAM1 RNA and VGAM2 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42988] VGAM1937 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1937 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1937 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1937 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42989] VGAM1938 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1938 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1938 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1938 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42990] It is appreciated that a function of VGR3153 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3153 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3153 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3153 gene: VGAM1937 host target protein and VGAM1938 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN and VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1937 and VGAM1938

[42991] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred

to here as Viral Genomic Record 3154(VGR3154) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[42992] VGR3154 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3154 gene was detected is described hereinabove with reference to Figs. 6-15.

[42993] VGR3154 gene encodes VGR3154 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[42994] VGR3154 precursor RNA folds spatially, forming VGR3154 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3154 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3154 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which

is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[42995] VGR3154 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM1940 precursor RNA, VGAM1941 precursor RNA, VGAM1942 precursor RNA, VGAM1943 precursor RNA, VGAM1944 precursor RNA, VGAM1945 precursor RNA, VGAM1946 precursor RNA and VGAM1947 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[42996] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1940 RNA, VGAM1941 RNA, VGAM1942 RNA, VGAM1943 RNA, VGAM1944 RNA, VGAM1945 RNA, VGAM1946 RNA and VGAM1947 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4

RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[42997] VGAM1940 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1940 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1940 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1940 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[42998] VGAM1941 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1941 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1941 host target RNA, herein

schematically represented by VGAM2 HOST TARGET RNA into VGAM1941 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[42999] VGAM1942 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1942 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1942 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1942 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43000] VGAM1943 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1943 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby in-

hibiting translation of VGAM1943 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1943 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43001] VGAM1944 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1944 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1944 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1944 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[43002] VGAM1945 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM1945 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1945 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM1945 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[43003] VGAM1946 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM1946 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1946 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM1946 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[43004] VGAM1947 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM1947 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1947 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM1947 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[43005] It is appreciated that a function of VGR3154 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3154 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3154 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3154 gene: VGAM1940 host target protein, VGAM1941 host target protein, VGAM1942 host target protein, VGAM1943 host target protein, VGAM1944 host target protein, VGAM1945 host target protein, VGAM1946 host target protein and VGAM1947 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through

VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1940, VGAM1941, VGAM1942, VGAM1943, VGAM1944, VGAM1945, VGAM1946 and VGAM1947

[43006] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3155(VGR3155) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43007] VGR3155 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3155 gene was detected is described hereinabove with reference to Figs. 6–15.

[43008] VGR3155 gene encodes VGR3155 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43009] VGR3155 precursor RNA folds spatially, forming VGR3155 folded precursor RNA, herein designated VGR FOLDED

PRECURSOR RNA. It is appreciated that VGR3155 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3155 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[43010] VGR3155 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 7 separate VGAM precursor RNAs, VGAM1948 precursor RNA, VGAM1949 precursor RNA, VGAM1950 precursor RNA, VGAM1951 precursor RNA, VGAM1952 precursor RNA, VGAM1953 precursor RNA and VGAM1954 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR and VGAM7 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43011] The above mentioned VGAM precursor RNAs are diced by

DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1948 RNA, VGAM1949 RNA, VGAM1950 RNA, VGAM1951 RNA, VGAM1952 RNA, VGAM1953 RNA and VGAM1954 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA and VGAM7 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43012] VGAM1948 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1948 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1948 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1948 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43013] VGAM1949 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1949 host

target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1949 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1949 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43014] VGAM1950 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1950 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1950 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1950 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43015] VGAM1951 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding

site located in an untranslated region of VGAM1951 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1951 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1951 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43016] VGAM1952 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1952 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1952 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1952 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[43017] VGAM1953 RNA, herein schematically represented by

VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM1953 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1953 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM1953 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[43018] VGAM1954 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM1954 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1954 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM1954 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[43019] It is appreciated that a function of VGR3155 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3155 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3155 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3155 gene: VGAM1948 host target protein, VGAM1949 host target protein, VGAM1950 host target protein, VGAM1951 host target protein, VGAM1952 host target protein, VGAM1953 host target protein and VGAM1954 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1948, VGAM1949, VGAM1950, VGAM1951, VGAM1952, VGAM1953 and VGAM1954

[43020] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3156(VGR3156) viral

gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43021] VGR3156 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3156 gene was detected is described hereinabove with reference to Figs. 6–15.

[43022] VGR3156 gene encodes VGR3156 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43023] VGR3156 precursor RNA folds spatially, forming VGR3156 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3156 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3156 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the

second half thereof, as is well known in the art.

[43024] VGR3156 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 6 separate VGAM precursor RNAs, VGAM1955 precursor RNA, VGAM1956 precursor RNA, VGAM1957 precursor RNA, VGAM1958 precursor RNA, VGAM1959 precursor RNA and VGAM1960 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR and VGAM6 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43025] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1955 RNA, VGAM1956 RNA, VGAM1957 RNA, VGAM1958 RNA, VGAM1959 RNA and VGAM1960 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA and VGAM6 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43026] VGAM1955 RNA, herein schematically represented by

VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1955 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1955 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1955 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43027] VGAM1956 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1956 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1956 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1956 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43028] VGAM1957 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1957 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1957 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1957 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43029] VGAM1958 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1958 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1958 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1958 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of

Fig. 1.

[43030] VGAM1959 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1959 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1959 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1959 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[43031] VGAM1960 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM1960 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1960 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM1960 host target protein, herein schematically

represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[43032] It is appreciated that a function of VGR3156 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3156 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3156 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3156 gene: VGAM1955 host target protein, VGAM1956 host target protein, VGAM1957 host target protein, VGAM1958 host target protein, VGAM1959 host target protein and VGAM1960 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1955, VGAM1956, VGAM1957, VGAM1958, VGAM1959 and VGAM1960

[43033] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred

to here as Viral Genomic Record 3157(VGR3157) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43034] VGR3157 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3157 gene was detected is described hereinabove with reference to Figs. 6–15.

[43035] VGR3157 gene encodes VGR3157 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43036] VGR3157 precursor RNA folds spatially, forming VGR3157 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3157 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3157 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which

is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[43037] VGR3157 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate VGAM precursor RNAs, VGAM1961 precursor RNA, VGAM1962 precursor RNA and VGAM1963 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR and VGAM3 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43038] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1961 RNA, VGAM1962 RNA and VGAM1963 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA and VGAM3 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43039] VGAM1961 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1961 host target RNA, herein schematically represented by VGAM1

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1961 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1961 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43040] VGAM1962 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1962 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1962 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1962 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43041] VGAM1963 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1963 host

target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1963 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1963 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43042] It is appreciated that a function of VGR3157 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3157 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3157 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3157 gene: VGAM1961 host target protein, VGAM1962 host target protein and VGAM1963 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function

of these host target genes is elaborated hereinabove with reference to VGAM1961, VGAM1962 and VGAM1963

[43043] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3158(VGR3158) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43044] VGR3158 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3158 gene was detected is described hereinabove with reference to Figs. 6–15.

[43045] VGR3158 gene encodes VGR3158 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43046] VGR3158 precursor RNA folds spatially, forming VGR3158 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3158 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art

as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3158 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[43047] VGR3158 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM1964 precursor RNA, VGAM1965 precursor RNA, VGAM1966 precursor RNA, VGAM1967 precursor RNA, VGAM1968 precursor RNA, VGAM1969 precursor RNA, VGAM1970 precursor RNA and VGAM1971 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43048] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1964

RNA, VGAM1965 RNA, VGAM1966 RNA, VGAM1967 RNA, VGAM1968 RNA, VGAM1969 RNA, VGAM1970 RNA and VGAM1971 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43049] VGAM1964 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1964 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1964 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1964 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43050] VGAM1965 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1965 host target RNA, herein schematically represented by VGAM2

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1965 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1965 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43051] VGAM1966 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1966 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1966 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1966 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43052] VGAM1967 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1967 host

target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1967 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1967 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43053] VGAM1968 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1968 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1968 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1968 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[43054] VGAM1969 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding

site located in an untranslated region of VGAM1969 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1969 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM1969 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[43055] VGAM1970 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM1970 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1970 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM1970 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[43056] VGAM1971 RNA, herein schematically represented by

VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM1971 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1971 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM1971 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[43057] It is appreciated that a function of VGR3158 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3158 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3158 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3158 gene: VGAM1964 host target protein, VGAM1965 host target protein, VGAM1966 host target protein, VGAM1967 host target

protein, VGAM1968 host target protein, VGAM1969 host target protein, VGAM1970 host target protein and VGAM1971 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1964, VGAM1965, VGAM1966, VGAM1967, VGAM1968, VGAM1969, VGAM1970 and VGAM1971

[43058] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3159(VGR3159) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43059] VGR3159 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3159 gene was detected is described hereinabove with reference to Figs. 6–15.

[43060] VGR3159 gene encodes VGR3159 precursor RNA, herein

designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43061] VGR3159 precursor RNA folds spatially, forming VGR3159 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3159 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3159 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[43062] VGR3159 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 7 separate VGAM precursor RNAs, VGAM1972 precursor RNA, VGAM1973 precursor RNA, VGAM1974 precursor RNA, VGAM1975 precursor RNA, VGAM1976 precursor RNA, VGAM1977 precursor RNA and VGAM1978 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR and VGAM7 PRE-

CURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43063] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1972 RNA, VGAM1973 RNA, VGAM1974 RNA, VGAM1975 RNA, VGAM1976 RNA, VGAM1977 RNA and VGAM1978 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA and VGAM7 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43064] VGAM1972 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1972 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1972 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1972 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of

Fig. 1.

[43065] VGAM1973 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1973 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1973 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1973 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43066] VGAM1974 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1974 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1974 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1974 host target protein, herein schematically

represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43067] VGAM1975 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1975 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1975 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1975 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43068] VGAM1976 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1976 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1976 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA

into VGAM1976 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[43069] VGAM1977 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM1977 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1977 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM1977 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[43070] VGAM1978 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM1978 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1978 host target RNA, herein

schematically represented by VGAM7 HOST TARGET RNA into VGAM1978 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[43071] It is appreciated that a function of VGR3159 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3159 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3159 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3159 gene: VGAM1972 host target protein, VGAM1973 host target protein, VGAM1974 host target protein, VGAM1975 host target protein, VGAM1976 host target protein, VGAM1977 host target protein and VGAM1978 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1972, VGAM1973, VGAM1974, VGAM1975, VGAM1976, VGAM1977 and

VGAM1978

[43072] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3160(VGR3160) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43073] VGR3160 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3160 gene was detected is described hereinabove with reference to Figs. 6–15.

[43074] VGR3160 gene encodes VGR3160 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43075] VGR3160 precursor RNA folds spatially, forming VGR3160 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3160 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to

the fact that the nucleotide sequence of VGR3160 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[43076] VGR3160 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate VGAM precursor RNAs, VGAM1979 precursor RNA and VGAM1980 precursor RNA, herein schematically represented by VGAM1 PRECURSOR and VGAM2 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43077] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1979 RNA and VGAM1980 RNA respectively, herein schematically represented by VGAM1 RNA and VGAM2 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43078] VGAM1979 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding

site located in an untranslated region of VGAM1979 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1979 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1979 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43079] VGAM1980 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1980 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1980 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1980 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43080] It is appreciated that a function of VGR3160 gene, herein

designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3160 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3160 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3160 gene: VGAM1979 host target protein and VGAM1980 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN and VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1979 and VGAM1980

[43081] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3161(VGR3161) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43082] VGR3161 gene, herein designated VGR GENE, is a novel

bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3161 gene was detected is described hereinabove with reference to Figs. 6–15.

[43083] VGR3161 gene encodes VGR3161 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43084] VGR3161 precursor RNA folds spatially, forming VGR3161 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3161 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3161 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[43085] VGR3161 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 7 separate VGAM precursor RNAs, VGAM1981 precursor RNA, VGAM1982 precursor RNA, VGAM1983 precursor RNA, VGAM1984 pre–

cursor RNA, VGAM1985 precursor RNA, VGAM1986 precursor RNA and VGAM1987 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR and VGAM7 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43086] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1981 RNA, VGAM1982 RNA, VGAM1983 RNA, VGAM1984 RNA, VGAM1985 RNA, VGAM1986 RNA and VGAM1987 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA and VGAM7 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43087] VGAM1981 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1981 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1981 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1981 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43088] VGAM1982 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1982 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1982 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1982 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43089] VGAM1983 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1983 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1983 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1983 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43090] VGAM1984 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1984 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1984 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM1984 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43091] VGAM1985 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1985 host target RNA, herein schematically represented by VGAM5

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1985 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1985 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[43092] VGAM1986 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM1986 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1986 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM1986 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[43093] VGAM1987 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM1987 host

target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1987 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM1987 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[43094] It is appreciated that a function of VGR3161 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3161 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3161 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3161 gene: VGAM1981 host target protein, VGAM1982 host target protein, VGAM1983 host target protein, VGAM1984 host target protein, VGAM1985 host target protein, VGAM1986 host target protein and VGAM1987 host target protein, herein

schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1981, VGAM1982, VGAM1983, VGAM1984, VGAM1985, VGAM1986 and VGAM1987

[43095] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3162(VGR3162) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43096] VGR3162 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3162 gene was detected is described hereinabove with reference to Figs. 6-15.

[43097] VGR3162 gene encodes VGR3162 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43098] VGR3162 precursor RNA folds spatially, forming VGR3162

folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3162 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3162 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[43099] VGR3162 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate VGAM precursor RNAs, VGAM1988 precursor RNA and VGAM1989 precursor RNA, herein schematically represented by VGAM1 PRECURSOR and VGAM2 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43100] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1988 RNA and VGAM1989 RNA respectively, herein schemati-

cally represented by VGAM1 RNA and VGAM2 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43101] VGAM1988 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1988 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1988 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1988 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43102] VGAM1989 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1989 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1989 host target RNA, herein

schematically represented by VGAM2 HOST TARGET RNA into VGAM1989 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43103] It is appreciated that a function of VGR3162 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3162 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3162 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3162 gene: VGAM1988 host target protein and VGAM1989 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN and VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1988 and VGAM1989

[43104] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3163(VGR3163) viral gene, which encodes an operon-like cluster of novel viral

micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43105] VGR3163 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3163 gene was detected is described hereinabove with reference to Figs. 6–15.

[43106] VGR3163 gene encodes VGR3163 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43107] VGR3163 precursor RNA folds spatially, forming VGR3163 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3163 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3163 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[43108] VGR3163 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM1990 precursor RNA, VGAM1991 precursor RNA, VGAM1992 precursor RNA, VGAM1993 precursor RNA, VGAM1994 precursor RNA, VGAM1995 precursor RNA, VGAM1996 precursor RNA and VGAM1997 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43109] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1990 RNA, VGAM1991 RNA, VGAM1992 RNA, VGAM1993 RNA, VGAM1994 RNA, VGAM1995 RNA, VGAM1996 RNA and VGAM1997 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs correspond-

ing to VGAM RNA of Fig. 8.

[43110] VGAM1990 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1990 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1990 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1990 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43111] VGAM1991 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1991 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1991 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1991 host target protein, herein schematically

represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43112] VGAM1992 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM1992 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1992 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM1992 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43113] VGAM1993 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM1993 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1993 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA

into VGAM1993 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43114] VGAM1994 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM1994 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1994 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM1994 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[43115] VGAM1995 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM1995 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1995 host target RNA, herein

schematically represented by VGAM6 HOST TARGET RNA into VGAM1995 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[43116] VGAM1996 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM1996 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1996 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM1996 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[43117] VGAM1997 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM1997 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby in-

hibiting translation of VGAM1997 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM1997 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[43118] It is appreciated that a function of VGR3163 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3163 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3163 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3163 gene: VGAM1990 host target protein, VGAM1991 host target protein, VGAM1992 host target protein, VGAM1993 host target protein, VGAM1994 host target protein, VGAM1995 host target protein, VGAM1996 host target protein and VGAM1997 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with

reference to VGAM1990, VGAM1991, VGAM1992, VGAM1993, VGAM1994, VGAM1995, VGAM1996 and VGAM1997

[43119] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3164(VGR3164) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43120] VGR3164 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3164 gene was detected is described hereinabove with reference to Figs. 6–15.

[43121] VGR3164 gene encodes VGR3164 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43122] VGR3164 precursor RNA folds spatially, forming VGR3164 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3164 folded precursor RNA, herein designated VGR FOLDED PRECUR–

SOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3164 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[43123] VGR3164 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 6 separate VGAM precursor RNAs, VGAM1998 precursor RNA, VGAM1999 precursor RNA, VGAM2000 precursor RNA, VGAM2001 precursor RNA, VGAM2002 precursor RNA and VGAM2003 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR and VGAM6 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43124] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM1998 RNA, VGAM1999 RNA, VGAM2000 RNA, VGAM2001 RNA,

VGAM2002 RNA and VGAM2003 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA and VGAM6 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43125] VGAM1998 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM1998 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1998 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM1998 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43126] VGAM1999 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM1999 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM1999 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM1999 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43127] VGAM2000 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2000 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2000 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2000 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43128] VGAM2001 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2001 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2001 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2001 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43129] VGAM2002 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2002 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2002 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2002 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[43130] VGAM2003 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2003 host target RNA, herein schematically represented by VGAM6

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2003 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2003 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[43131] It is appreciated that a function of VGR3164 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3164 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3164 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3164 gene: VGAM1998 host target protein, VGAM1999 host target protein, VGAM2000 host target protein, VGAM2001 host target protein, VGAM2002 host target protein and VGAM2003 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TAR-

GET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM1998, VGAM1999, VGAM2000, VGAM2001, VGAM2002 and VGAM2003

[43132] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3165(VGR3165) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43133] VGR3165 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3165 gene was detected is described hereinabove with reference to Figs. 6–15.

[43134] VGR3165 gene encodes VGR3165 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43135] VGR3165 precursor RNA folds spatially, forming VGR3165 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3165 folded

precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3165 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[43136] VGR3165 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate VGAM precursor RNAs, VGAM2004 precursor RNA, VGAM2005 precursor RNA and VGAM2006 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR and VGAM3 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43137] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2004 RNA, VGAM2005 RNA and VGAM2006 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2

RNA and VGAM3 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43138] VGAM2004 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2004 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2004 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2004 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43139] VGAM2005 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2005 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2005 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA

into VGAM2005 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43140] VGAM2006 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2006 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2006 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2006 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43141] It is appreciated that a function of VGR3165 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3165 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3165 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target

genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3165 gene: VGAM2004 host target protein, VGAM2005 host target protein and VGAM2006 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2004, VGAM2005 and VGAM2006

[43142] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3166(VGR3166) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43143] VGR3166 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3166 gene was detected is described hereinabove with reference to Figs. 6–15.

[43144] VGR3166 gene encodes VGR3166 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typi-

cally several hundred nucleotides long.

[43145] VGR3166 precursor RNA folds spatially, forming VGR3166 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3166 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3166 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[43146] VGR3166 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM2007 precursor RNA, VGAM2008 precursor RNA, VGAM2009 precursor RNA, VGAM2010 precursor RNA, VGAM2011 precursor RNA, VGAM2012 precursor RNA, VGAM2013 precursor RNA and VGAM2014 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRE-

CURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43147] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2007 RNA, VGAM2008 RNA, VGAM2009 RNA, VGAM2010 RNA, VGAM2011 RNA, VGAM2012 RNA, VGAM2013 RNA and VGAM2014 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43148] VGAM2007 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2007 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2007 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2007 host target protein, herein schematically

represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43149] VGAM2008 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2008 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2008 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2008 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43150] VGAM2009 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2009 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2009 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA

into VGAM2009 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43151] VGAM2010 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2010 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2010 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2010 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43152] VGAM2011 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2011 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2011 host target RNA, herein

schematically represented by VGAM5 HOST TARGET RNA into VGAM2011 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[43153] VGAM2012 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2012 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2012 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2012 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[43154] VGAM2013 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2013 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby in-

hibiting translation of VGAM2013 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM2013 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[43155] VGAM2014 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM2014 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2014 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM2014 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[43156] It is appreciated that a function of VGR3166 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3166 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3166

gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3166 gene: VGAM2007 host target protein, VGAM2008 host target protein, VGAM2009 host target protein, VGAM2010 host target protein, VGAM2011 host target protein, VGAM2012 host target protein, VGAM2013 host target protein and VGAM2014 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2007, VGAM2008, VGAM2009, VGAM2010, VGAM2011, VGAM2012, VGAM2013 and VGAM2014

[43157] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3167(VGR3167) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43158] VGR3167 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3167 gene was detected is described hereinabove with reference to Figs. 6–15.

[43159] VGR3167 gene encodes VGR3167 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43160] VGR3167 precursor RNA folds spatially, forming VGR3167 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3167 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3167 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[43161] VGR3167 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM2015 precursor RNA, VGAM2016 pre–

cursor RNA, VGAM2017 precursor RNA, VGAM2018 precursor RNA, VGAM2019 precursor RNA, VGAM2020 precursor RNA, VGAM2021 precursor RNA and VGAM2022 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43162] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2015 RNA, VGAM2016 RNA, VGAM2017 RNA, VGAM2018 RNA, VGAM2019 RNA, VGAM2020 RNA, VGAM2021 RNA and VGAM2022 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43163] VGAM2015 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2015 host

target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2015 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2015 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43164] VGAM2016 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2016 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2016 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2016 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43165] VGAM2017 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding

site located in an untranslated region of VGAM2017 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2017 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2017 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43166] VGAM2018 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2018 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2018 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2018 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43167] VGAM2019 RNA, herein schematically represented by

VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2019 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2019 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2019 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[43168] VGAM2020 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2020 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2020 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2020 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[43169] VGAM2021 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2021 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2021 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM2021 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[43170] VGAM2022 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM2022 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2022 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM2022 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of

Fig. 1.

[43171] It is appreciated that a function of VGR3167 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3167 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3167 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3167 gene: VGAM2015 host target protein, VGAM2016 host target protein, VGAM2017 host target protein, VGAM2018 host target protein, VGAM2019 host target protein, VGAM2020 host target protein, VGAM2021 host target protein and VGAM2022 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2015, VGAM2016, VGAM2017, VGAM2018, VGAM2019, VGAM2020, VGAM2021 and VGAM2022

[43172] Fig. 9 further provides a conceptual description of novel

bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3168(VGR3168) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43173] VGR3168 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3168 gene was detected is described hereinabove with reference to Figs. 6–15.

[43174] VGR3168 gene encodes VGR3168 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43175] VGR3168 precursor RNA folds spatially, forming VGR3168 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3168 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3168 precursor RNA comprises a plurality of segments, the first half

of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[43176] VGR3168 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM2023 precursor RNA, VGAM2024 precursor RNA, VGAM2025 precursor RNA, VGAM2026 precursor RNA, VGAM2027 precursor RNA, VGAM2028 precursor RNA, VGAM2029 precursor RNA and VGAM2030 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43177] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2023 RNA, VGAM2024 RNA, VGAM2025 RNA, VGAM2026 RNA, VGAM2027 RNA, VGAM2028 RNA, VGAM2029 RNA and VGAM2030 RNA respectively, herein schematically repre-

sented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43178] VGAM2023 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2023 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2023 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2023 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43179] VGAM2024 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2024 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby in-

hibiting translation of VGAM2024 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2024 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43180] VGAM2025 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2025 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2025 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2025 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43181] VGAM2026 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2026 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2026 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2026 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43182] VGAM2027 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2027 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2027 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2027 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[43183] VGAM2028 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2028 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2028 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2028 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[43184] VGAM2029 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2029 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2029 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM2029 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[43185] VGAM2030 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM2030 host target RNA, herein schematically represented by VGAM8

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2030 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM2030 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[43186] It is appreciated that a function of VGR3168 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3168 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3168 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3168 gene: VGAM2023 host target protein, VGAM2024 host target protein, VGAM2025 host target protein, VGAM2026 host target protein, VGAM2027 host target protein, VGAM2028 host target protein, VGAM2029 host target protein and VGAM2030 host target protein, herein schematically rep-

resented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2023, VGAM2024, VGAM2025, VGAM2026, VGAM2027, VGAM2028, VGAM2029 and VGAM2030

[43187] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3169(VGR3169) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43188] VGR3169 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3169 gene was detected is described hereinabove with reference to Figs. 6–15.

[43189] VGR3169 gene encodes VGR3169 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43190] VGR3169 precursor RNA folds spatially, forming VGR3169

folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3169 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3169 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[43191] VGR3169 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 5 separate VGAM precursor RNAs, VGAM2031 precursor RNA, VGAM2032 precursor RNA, VGAM2033 precursor RNA, VGAM2034 precursor RNA and VGAM2035 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR and VGAM5 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43192] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA

segments of about 22 nucleotides in length, VGAM2031 RNA, VGAM2032 RNA, VGAM2033 RNA, VGAM2034 RNA and VGAM2035 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA and VGAM5 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43193] VGAM2031 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2031 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2031 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2031 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43194] VGAM2032 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2032 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2032 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2032 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43195] VGAM2033 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2033 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2033 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2033 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43196] VGAM2034 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2034 host target RNA, herein schematically represented by VGAM4

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2034 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2034 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43197] VGAM2035 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2035 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2035 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2035 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[43198] It is appreciated that a function of VGR3169 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attack–

ing a host. Accordingly, utilities of VGR3169 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3169 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3169 gene: VGAM2031 host target protein, VGAM2032 host target protein, VGAM2033 host target protein, VGAM2034 host target protein and VGAM2035 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2031, VGAM2032, VGAM2033, VGAM2034 and VGAM2035

[43199] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3170(VGR3170) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43200] VGR3170 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3170 gene was detected is described hereinabove with reference to Figs. 6–15.

[43201] VGR3170 gene encodes VGR3170 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43202] VGR3170 precursor RNA folds spatially, forming VGR3170 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3170 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3170 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[43203] VGR3170 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 6 separate VGAM precursor RNAs, VGAM2036 precursor RNA, VGAM2037 pre–

cursor RNA, VGAM2038 precursor RNA, VGAM2039 precursor RNA, VGAM2040 precursor RNA and VGAM2041 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR and VGAM6 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43204] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2036 RNA, VGAM2037 RNA, VGAM2038 RNA, VGAM2039 RNA, VGAM2040 RNA and VGAM2041 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA and VGAM6 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43205] VGAM2036 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2036 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2036 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2036 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43206] VGAM2037 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2037 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2037 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2037 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43207] VGAM2038 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2038 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2038 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2038 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43208] VGAM2039 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2039 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2039 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2039 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43209] VGAM2040 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2040 host target RNA, herein schematically represented by VGAM5

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2040 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2040 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[43210] VGAM2041 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2041 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2041 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2041 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[43211] It is appreciated that a function of VGR3170 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attack–

ing a host. Accordingly, utilities of VGR3170 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3170 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3170 gene: VGAM2036 host target protein, VGAM2037 host target protein, VGAM2038 host target protein, VGAM2039 host target protein, VGAM2040 host target protein and VGAM2041 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2036, VGAM2037, VGAM2038, VGAM2039, VGAM2040 and VGAM2041

[43212] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3171(VGR3171) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known

in the art.

[43213] VGR3171 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3171 gene was detected is described hereinabove with reference to Figs. 6–15.

[43214] VGR3171 gene encodes VGR3171 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43215] VGR3171 precursor RNA folds spatially, forming VGR3171 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3171 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3171 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[43216] VGR3171 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM pre–

cursor RNAs, VGAM2042 precursor RNA, VGAM2043 precursor RNA, VGAM2044 precursor RNA, VGAM2045 precursor RNA, VGAM2046 precursor RNA, VGAM2047 precursor RNA, VGAM2048 precursor RNA and VGAM2049 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43217] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2042 RNA, VGAM2043 RNA, VGAM2044 RNA, VGAM2045 RNA, VGAM2046 RNA, VGAM2047 RNA, VGAM2048 RNA and VGAM2049 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43218] VGAM2042 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding

site located in an untranslated region of VGAM2042 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2042 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2042 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43219] VGAM2043 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2043 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2043 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2043 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43220] VGAM2044 RNA, herein schematically represented by

VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2044 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2044 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2044 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43221] VGAM2045 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2045 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2045 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2045 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43222] VGAM2046 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2046 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2046 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2046 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[43223] VGAM2047 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2047 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2047 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2047 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of

Fig. 1.

[43224] VGAM2048 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2048 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2048 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM2048 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[43225] VGAM2049 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM2049 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2049 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM2049 host target protein, herein schematically

represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[43226] It is appreciated that a function of VGR3171 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3171 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3171 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3171 gene: VGAM2042 host target protein, VGAM2043 host target protein, VGAM2044 host target protein, VGAM2045 host target protein, VGAM2046 host target protein, VGAM2047 host target protein, VGAM2048 host target protein and VGAM2049 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2042, VGAM2043, VGAM2044, VGAM2045, VGAM2046, VGAM2047, VGAM2048 and VGAM2049

[43227] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3172(VGR3172) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43228] VGR3172 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3172 gene was detected is described hereinabove with reference to Figs. 6–15.

[43229] VGR3172 gene encodes VGR3172 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43230] VGR3172 precursor RNA folds spatially, forming VGR3172 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3172 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3172 precursor

sor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[43231] VGR3172 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate VGAM precursor RNAs, VGAM2050 precursor RNA, VGAM2051 precursor RNA, VGAM2052 precursor RNA and VGAM2053 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR and VGAM4 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43232] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2050 RNA, VGAM2051 RNA, VGAM2052 RNA and VGAM2053 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA and VGAM4 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43233] VGAM2050 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2050 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2050 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2050 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43234] VGAM2051 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2051 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2051 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2051 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of

Fig. 1.

[43235] VGAM2052 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2052 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2052 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2052 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43236] VGAM2053 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2053 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2053 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2053 host target protein, herein schematically

represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43237] It is appreciated that a function of VGR3172 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3172 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3172 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3172 gene: VGAM2050 host target protein, VGAM2051 host target protein, VGAM2052 host target protein and VGAM2053 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2050, VGAM2051, VGAM2052 and VGAM2053

[43238] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3173(VGR3173) viral gene, which encodes an operon-like cluster of novel viral

micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43239] VGR3173 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3173 gene was detected is described hereinabove with reference to Figs. 6–15.

[43240] VGR3173 gene encodes VGR3173 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43241] VGR3173 precursor RNA folds spatially, forming VGR3173 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3173 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3173 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[43242] VGR3173 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM2054 precursor RNA, VGAM2055 precursor RNA, VGAM2056 precursor RNA, VGAM2057 precursor RNA, VGAM2058 precursor RNA, VGAM2059 precursor RNA, VGAM2060 precursor RNA and VGAM2061 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43243] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2054 RNA, VGAM2055 RNA, VGAM2056 RNA, VGAM2057 RNA, VGAM2058 RNA, VGAM2059 RNA, VGAM2060 RNA and VGAM2061 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs correspond-

ing to VGAM RNA of Fig. 8.

[43244] VGAM2054 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2054 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2054 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2054 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43245] VGAM2055 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2055 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2055 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2055 host target protein, herein schematically

represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43246] VGAM2056 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2056 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2056 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2056 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43247] VGAM2057 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2057 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2057 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA

into VGAM2057 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43248] VGAM2058 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2058 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2058 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2058 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[43249] VGAM2059 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2059 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2059 host target RNA, herein

schematically represented by VGAM6 HOST TARGET RNA into VGAM2059 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[43250] VGAM2060 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2060 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2060 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM2060 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[43251] VGAM2061 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM2061 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby in-

hibiting translation of VGAM2061 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM2061 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[43252] It is appreciated that a function of VGR3173 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3173 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3173 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3173 gene: VGAM2054 host target protein, VGAM2055 host target protein, VGAM2056 host target protein, VGAM2057 host target protein, VGAM2058 host target protein, VGAM2059 host target protein, VGAM2060 host target protein and VGAM2061 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with

reference to VGAM2054, VGAM2055, VGAM2056, VGAM2057, VGAM2058, VGAM2059, VGAM2060 and VGAM2061

[43253] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3174(VGR3174) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43254] VGR3174 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3174 gene was detected is described hereinabove with reference to Figs. 6–15.

[43255] VGR3174 gene encodes VGR3174 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43256] VGR3174 precursor RNA folds spatially, forming VGR3174 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3174 folded precursor RNA, herein designated VGR FOLDED PRECUR–

SOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3174 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[43257] VGR3174 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 6 separate VGAM precursor RNAs, VGAM2062 precursor RNA, VGAM2063 precursor RNA, VGAM2064 precursor RNA, VGAM2065 precursor RNA, VGAM2066 precursor RNA and VGAM2067 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR and VGAM6 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43258] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2062 RNA, VGAM2063 RNA, VGAM2064 RNA, VGAM2065 RNA,

VGAM2066 RNA and VGAM2067 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA and VGAM6 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43259] VGAM2062 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2062 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2062 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2062 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43260] VGAM2063 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2063 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2063 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2063 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43261] VGAM2064 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2064 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2064 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2064 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43262] VGAM2065 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2065 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2065 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2065 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43263] VGAM2066 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2066 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2066 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2066 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[43264] VGAM2067 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2067 host target RNA, herein schematically represented by VGAM6

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2067 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2067 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[43265] It is appreciated that a function of VGR3174 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3174 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3174 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3174 gene: VGAM2062 host target protein, VGAM2063 host target protein, VGAM2064 host target protein, VGAM2065 host target protein, VGAM2066 host target protein and VGAM2067 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TAR-

GET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2062, VGAM2063, VGAM2064, VGAM2065, VGAM2066 and VGAM2067

[43266] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3175(VGR3175) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43267] VGR3175 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3175 gene was detected is described hereinabove with reference to Figs. 6–15.

[43268] VGR3175 gene encodes VGR3175 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43269] VGR3175 precursor RNA folds spatially, forming VGR3175 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3175 folded

precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3175 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[43270] VGR3175 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 7 separate VGAM precursor RNAs, VGAM2068 precursor RNA, VGAM2069 precursor RNA, VGAM2070 precursor RNA, VGAM2071 precursor RNA, VGAM2072 precursor RNA, VGAM2073 precursor RNA and VGAM2074 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR and VGAM7 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43271] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA

segments of about 22 nucleotides in length, VGAM2068 RNA, VGAM2069 RNA, VGAM2070 RNA, VGAM2071 RNA, VGAM2072 RNA, VGAM2073 RNA and VGAM2074 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA and VGAM7 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43272] VGAM2068 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2068 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2068 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2068 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43273] VGAM2069 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2069 host target RNA, herein schematically represented by VGAM2

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2069 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2069 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43274] VGAM2070 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2070 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2070 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2070 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43275] VGAM2071 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2071 host

target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2071 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2071 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43276] VGAM2072 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2072 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2072 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2072 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[43277] VGAM2073 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding

site located in an untranslated region of VGAM2073 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2073 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2073 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[43278] VGAM2074 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2074 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2074 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM2074 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[43279] It is appreciated that a function of VGR3175 gene, herein

designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3175 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3175 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3175 gene: VGAM2068 host target protein, VGAM2069 host target protein, VGAM2070 host target protein, VGAM2071 host target protein, VGAM2072 host target protein, VGAM2073 host target protein and VGAM2074 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2068, VGAM2069, VGAM2070, VGAM2071, VGAM2072, VGAM2073 and VGAM2074

[43280] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3176(VGR3176) viral gene, which encodes an operon-like cluster of novel viral

micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43281] VGR3176 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3176 gene was detected is described hereinabove with reference to Figs. 6–15.

[43282] VGR3176 gene encodes VGR3176 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43283] VGR3176 precursor RNA folds spatially, forming VGR3176 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3176 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3176 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[43284] VGR3176 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM2075 precursor RNA, VGAM2076 precursor RNA, VGAM2077 precursor RNA, VGAM2078 precursor RNA, VGAM2079 precursor RNA, VGAM2080 precursor RNA, VGAM2081 precursor RNA and VGAM2082 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43285] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2075 RNA, VGAM2076 RNA, VGAM2077 RNA, VGAM2078 RNA, VGAM2079 RNA, VGAM2080 RNA, VGAM2081 RNA and VGAM2082 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs correspond-

ing to VGAM RNA of Fig. 8.

[43286] VGAM2075 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2075 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2075 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2075 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43287] VGAM2076 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2076 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2076 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2076 host target protein, herein schematically

represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43288] VGAM2077 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2077 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2077 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2077 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43289] VGAM2078 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2078 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2078 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA

into VGAM2078 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43290] VGAM2079 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2079 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2079 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2079 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[43291] VGAM2080 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2080 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2080 host target RNA, herein

schematically represented by VGAM6 HOST TARGET RNA into VGAM2080 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[43292] VGAM2081 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2081 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2081 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM2081 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[43293] VGAM2082 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM2082 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby in-

hibiting translation of VGAM2082 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM2082 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[43294] It is appreciated that a function of VGR3176 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3176 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3176 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3176 gene: VGAM2075 host target protein, VGAM2076 host target protein, VGAM2077 host target protein, VGAM2078 host target protein, VGAM2079 host target protein, VGAM2080 host target protein, VGAM2081 host target protein and VGAM2082 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with

reference to VGAM2075, VGAM2076, VGAM2077, VGAM2078, VGAM2079, VGAM2080, VGAM2081 and VGAM2082

[43295] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3177(VGR3177) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43296] VGR3177 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3177 gene was detected is described hereinabove with reference to Figs. 6–15.

[43297] VGR3177 gene encodes VGR3177 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43298] VGR3177 precursor RNA folds spatially, forming VGR3177 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3177 folded precursor RNA, herein designated VGR FOLDED PRECUR-

SOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3177 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[43299] VGR3177 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate VGAM precursor RNAs, VGAM2083 precursor RNA and VGAM2084 precursor RNA, herein schematically represented by VGAM1 PRECURSOR and VGAM2 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43300] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2083 RNA and VGAM2084 RNA respectively, herein schematically represented by VGAM1 RNA and VGAM2 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43301] VGAM2083 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2083 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2083 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2083 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43302] VGAM2084 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2084 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2084 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2084 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of

Fig. 1.

[43303] It is appreciated that a function of VGR3177 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3177 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3177 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3177 gene: VGAM2083 host target protein and VGAM2084 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN and VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2083 and VGAM2084

[43304] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3178(VGR3178) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known

in the art.

[43305] VGR3178 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3178 gene was detected is described hereinabove with reference to Figs. 6–15.

[43306] VGR3178 gene encodes VGR3178 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43307] VGR3178 precursor RNA folds spatially, forming VGR3178 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3178 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3178 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[43308] VGR3178 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM pre–

cursor RNAs, VGAM2085 precursor RNA, VGAM2086 precursor RNA, VGAM2087 precursor RNA, VGAM2088 precursor RNA, VGAM2089 precursor RNA, VGAM2090 precursor RNA, VGAM2091 precursor RNA and VGAM2092 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43309] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2085 RNA, VGAM2086 RNA, VGAM2087 RNA, VGAM2088 RNA, VGAM2089 RNA, VGAM2090 RNA, VGAM2091 RNA and VGAM2092 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43310] VGAM2085 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding

site located in an untranslated region of VGAM2085 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2085 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2085 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43311] VGAM2086 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2086 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2086 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2086 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43312] VGAM2087 RNA, herein schematically represented by

VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2087 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2087 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2087 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43313] VGAM2088 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2088 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2088 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2088 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43314] VGAM2089 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2089 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2089 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2089 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[43315] VGAM2090 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2090 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2090 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2090 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of

Fig. 1.

[43316] VGAM2091 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2091 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2091 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM2091 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[43317] VGAM2092 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM2092 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2092 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM2092 host target protein, herein schematically

represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[43318] It is appreciated that a function of VGR3178 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3178 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3178 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3178 gene: VGAM2085 host target protein, VGAM2086 host target protein, VGAM2087 host target protein, VGAM2088 host target protein, VGAM2089 host target protein, VGAM2090 host target protein, VGAM2091 host target protein and VGAM2092 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2085, VGAM2086, VGAM2087, VGAM2088, VGAM2089, VGAM2090, VGAM2091 and VGAM2092

[43319] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3179(VGR3179) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43320] VGR3179 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3179 gene was detected is described hereinabove with reference to Figs. 6–15.

[43321] VGR3179 gene encodes VGR3179 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43322] VGR3179 precursor RNA folds spatially, forming VGR3179 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3179 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3179 precursor

sor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[43323] VGR3179 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM2093 precursor RNA, VGAM2094 precursor RNA, VGAM2095 precursor RNA, VGAM2096 precursor RNA, VGAM2097 precursor RNA, VGAM2098 precursor RNA, VGAM2099 precursor RNA and VGAM2100 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43324] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2093 RNA, VGAM2094 RNA, VGAM2095 RNA, VGAM2096 RNA, VGAM2097 RNA, VGAM2098 RNA, VGAM2099 RNA and

VGAM2100 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43325] VGAM2093 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2093 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2093 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2093 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43326] VGAM2094 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2094 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2094 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2094 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43327] VGAM2095 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2095 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2095 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2095 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43328] VGAM2096 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2096 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2096 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2096 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43329] VGAM2097 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2097 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2097 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2097 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[43330] VGAM2098 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2098 host target RNA, herein schematically represented by VGAM6

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2098 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2098 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[43331] VGAM2099 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2099 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2099 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM2099 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[43332] VGAM2100 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM2100 host

target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2100 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM2100 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[43333] It is appreciated that a function of VGR3179 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3179 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3179 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3179 gene: VGAM2093 host target protein, VGAM2094 host target protein, VGAM2095 host target protein, VGAM2096 host target protein, VGAM2097 host target protein, VGAM2098 host target protein, VGAM2099 host target protein and

VGAM2100 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2093, VGAM2094, VGAM2095, VGAM2096, VGAM2097, VGAM2098, VGAM2099 and VGAM2100

[43334] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3180(VGR3180) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43335] VGR3180 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3180 gene was detected is described hereinabove with reference to Figs. 6-15.

[43336] VGR3180 gene encodes VGR3180 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43337] VGR3180 precursor RNA folds spatially, forming VGR3180 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3180 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3180 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[43338] VGR3180 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate VGAM precursor RNAs, VGAM2101 precursor RNA, VGAM2102 precursor RNA, VGAM2103 precursor RNA and VGAM2104 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR and VGAM4 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43339] The above mentioned VGAM precursor RNAs are diced by

DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2101 RNA, VGAM2102 RNA, VGAM2103 RNA and VGAM2104 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA and VGAM4 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43340] VGAM2101 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2101 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2101 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2101 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43341] VGAM2102 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2102 host target RNA, herein schematically represented by VGAM2

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2102 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2102 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43342] VGAM2103 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2103 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2103 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2103 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43343] VGAM2104 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2104 host

target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2104 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2104 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43344] It is appreciated that a function of VGR3180 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3180 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3180 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3180 gene: VGAM2101 host target protein, VGAM2102 host target protein, VGAM2103 host target protein and VGAM2104 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN

respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2101, VGAM2102, VGAM2103 and VGAM2104

[43345] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3181(VGR3181) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43346] VGR3181 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3181 gene was detected is described hereinabove with reference to Figs. 6–15.

[43347] VGR3181 gene encodes VGR3181 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43348] VGR3181 precursor RNA folds spatially, forming VGR3181 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3181 folded precursor RNA, herein designated VGR FOLDED PRECUR–

SOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3181 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[43349] VGR3181 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 7 separate VGAM precursor RNAs, VGAM2105 precursor RNA, VGAM2106 precursor RNA, VGAM2107 precursor RNA, VGAM2108 precursor RNA, VGAM2109 precursor RNA, VGAM2110 precursor RNA and VGAM2111 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR and VGAM7 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43350] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2105

RNA, VGAM2106 RNA, VGAM2107 RNA, VGAM2108 RNA, VGAM2109 RNA, VGAM2110 RNA and VGAM2111 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA and VGAM7 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43351] VGAM2105 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2105 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2105 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2105 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43352] VGAM2106 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2106 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2106 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2106 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43353] VGAM2107 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2107 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2107 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2107 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43354] VGAM2108 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2108 host target RNA, herein schematically represented by VGAM4

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2108 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2108 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43355] VGAM2109 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2109 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2109 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2109 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[43356] VGAM2110 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2110 host

target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2110 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2110 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[43357] VGAM2111 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2111 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2111 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM2111 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[43358] It is appreciated that a function of VGR3181 gene, herein designated VGR GENE, is inhibition of expression of host

target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3181 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3181 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3181 gene: VGAM2105 host target protein, VGAM2106 host target protein, VGAM2107 host target protein, VGAM2108 host target protein, VGAM2109 host target protein, VGAM2110 host target protein and VGAM2111 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2105, VGAM2106, VGAM2107, VGAM2108, VGAM2109, VGAM2110 and VGAM2111

[43359] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3182(VGR3182) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates

expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43360] VGR3182 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3182 gene was detected is described hereinabove with reference to Figs. 6–15.

[43361] VGR3182 gene encodes VGR3182 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43362] VGR3182 precursor RNA folds spatially, forming VGR3182 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3182 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3182 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[43363] VGR3182 folded precursor RNA, herein designated VGR

FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate VGAM precursor RNAs, VGAM2112 precursor RNA and VGAM2113 precursor RNA, herein schematically represented by VGAM1 PRECURSOR and VGAM2 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43364] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2112 RNA and VGAM2113 RNA respectively, herein schematically represented by VGAM1 RNA and VGAM2 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43365] VGAM2112 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2112 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2112 host target RNA, herein

schematically represented by VGAM1 HOST TARGET RNA into VGAM2112 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43366] VGAM2113 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2113 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2113 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2113 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43367] It is appreciated that a function of VGR3182 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3182 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3182 gene, herein designated VGR GENE, correlate with, and

may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3182 gene: VGAM2112 host target protein and VGAM2113 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN and VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2112 and VGAM2113

[43368] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3183(VGR3183) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43369] VGR3183 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3183 gene was detected is described hereinabove with reference to Figs. 6–15.

[43370] VGR3183 gene encodes VGR3183 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typi-

cally several hundred nucleotides long.

[43371] VGR3183 precursor RNA folds spatially, forming VGR3183 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3183 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3183 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[43372] VGR3183 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM2114 precursor RNA, VGAM2115 precursor RNA, VGAM2116 precursor RNA, VGAM2117 precursor RNA, VGAM2118 precursor RNA, VGAM2119 precursor RNA, VGAM2120 precursor RNA and VGAM2121 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRE-

CURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43373] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2114 RNA, VGAM2115 RNA, VGAM2116 RNA, VGAM2117 RNA, VGAM2118 RNA, VGAM2119 RNA, VGAM2120 RNA and VGAM2121 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43374] VGAM2114 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2114 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2114 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2114 host target protein, herein schematically

represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43375] VGAM2115 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2115 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2115 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2115 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43376] VGAM2116 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2116 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2116 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA

into VGAM2116 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43377] VGAM2117 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2117 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2117 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2117 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43378] VGAM2118 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2118 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2118 host target RNA, herein

schematically represented by VGAM5 HOST TARGET RNA into VGAM2118 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[43379] VGAM2119 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2119 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2119 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2119 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[43380] VGAM2120 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2120 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby in-

hibiting translation of VGAM2120 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM2120 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[43381] VGAM2121 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM2121 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2121 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM2121 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[43382] It is appreciated that a function of VGR3183 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3183 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3183

gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3183 gene: VGAM2114 host target protein, VGAM2115 host target protein, VGAM2116 host target protein, VGAM2117 host target protein, VGAM2118 host target protein, VGAM2119 host target protein, VGAM2120 host target protein and VGAM2121 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2114, VGAM2115, VGAM2116, VGAM2117, VGAM2118, VGAM2119, VGAM2120 and VGAM2121

[43383] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3184(VGR3184) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43384] VGR3184 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3184 gene was detected is described hereinabove with reference to Figs. 6–15.

[43385] VGR3184 gene encodes VGR3184 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43386] VGR3184 precursor RNA folds spatially, forming VGR3184 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3184 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3184 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[43387] VGR3184 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate VGAM precursor RNAs, VGAM2122 precursor RNA, VGAM2123 pre–

cursor RNA and VGAM2124 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR and VGAM3 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43388] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2122 RNA, VGAM2123 RNA and VGAM2124 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA and VGAM3 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43389] VGAM2122 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2122 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2122 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2122 host target protein, herein schematically

represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43390] VGAM2123 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2123 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2123 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2123 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43391] VGAM2124 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2124 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2124 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA

into VGAM2124 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43392] It is appreciated that a function of VGR3184 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3184 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3184 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3184 gene: VGAM2122 host target protein, VGAM2123 host target protein and VGAM2124 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2122, VGAM2123 and VGAM2124

[43393] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3185(VGR3185) viral gene, which encodes an operon-like cluster of novel viral

micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43394] VGR3185 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3185 gene was detected is described hereinabove with reference to Figs. 6–15.

[43395] VGR3185 gene encodes VGR3185 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43396] VGR3185 precursor RNA folds spatially, forming VGR3185 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3185 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3185 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[43397] VGR3185 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM2125 precursor RNA, VGAM2126 precursor RNA, VGAM2127 precursor RNA, VGAM2128 precursor RNA, VGAM2129 precursor RNA, VGAM2130 precursor RNA, VGAM2131 precursor RNA and VGAM2132 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43398] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2125 RNA, VGAM2126 RNA, VGAM2127 RNA, VGAM2128 RNA, VGAM2129 RNA, VGAM2130 RNA, VGAM2131 RNA and VGAM2132 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs correspond-

ing to VGAM RNA of Fig. 8.

[43399] VGAM2125 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2125 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2125 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2125 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43400] VGAM2126 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2126 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2126 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2126 host target protein, herein schematically

represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43401] VGAM2127 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2127 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2127 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2127 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43402] VGAM2128 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2128 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2128 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA

into VGAM2128 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43403] VGAM2129 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2129 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2129 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2129 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[43404] VGAM2130 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2130 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2130 host target RNA, herein

schematically represented by VGAM6 HOST TARGET RNA into VGAM2130 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[43405] VGAM2131 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2131 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2131 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM2131 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[43406] VGAM2132 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM2132 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby in-

hibiting translation of VGAM2132 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM2132 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[43407] It is appreciated that a function of VGR3185 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3185 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3185 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3185 gene: VGAM2125 host target protein, VGAM2126 host target protein, VGAM2127 host target protein, VGAM2128 host target protein, VGAM2129 host target protein, VGAM2130 host target protein, VGAM2131 host target protein and VGAM2132 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with

reference to VGAM2125, VGAM2126, VGAM2127, VGAM2128, VGAM2129, VGAM2130, VGAM2131 and VGAM2132

[43408] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3186(VGR3186) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43409] VGR3186 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3186 gene was detected is described hereinabove with reference to Figs. 6–15.

[43410] VGR3186 gene encodes VGR3186 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43411] VGR3186 precursor RNA folds spatially, forming VGR3186 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3186 folded precursor RNA, herein designated VGR FOLDED PRECUR-

SOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3186 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[43412] VGR3186 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate VGAM precursor RNAs, VGAM2133 precursor RNA, VGAM2134 precursor RNA and VGAM2135 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR and VGAM3 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43413] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2133 RNA, VGAM2134 RNA and VGAM2135 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA and VGAM3 RNA respectively, each of which VGAM

RNAs corresponding to VGAM RNA of Fig. 8.

[43414] VGAM2133 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2133 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2133 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2133 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43415] VGAM2134 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2134 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2134 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2134 host target protein, herein schematically

represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43416] VGAM2135 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2135 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2135 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2135 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43417] It is appreciated that a function of VGR3186 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3186 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3186 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in

the operon-like cluster of VGR3186 gene: VGAM2133 host target protein, VGAM2134 host target protein and VGAM2135 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2133, VGAM2134 and VGAM2135

[43418] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3187(VGR3187) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43419] VGR3187 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3187 gene was detected is described hereinabove with reference to Figs. 6-15.

[43420] VGR3187 gene encodes VGR3187 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43421] VGR3187 precursor RNA folds spatially, forming VGR3187 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3187 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3187 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[43422] VGR3187 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM2136 precursor RNA, VGAM2137 precursor RNA, VGAM2138 precursor RNA, VGAM2139 precursor RNA, VGAM2140 precursor RNA, VGAM2141 precursor RNA, VGAM2142 precursor RNA and VGAM2143 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs

being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43423] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2136 RNA, VGAM2137 RNA, VGAM2138 RNA, VGAM2139 RNA, VGAM2140 RNA, VGAM2141 RNA, VGAM2142 RNA and VGAM2143 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43424] VGAM2136 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2136 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2136 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2136 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of

Fig. 1.

[43425] VGAM2137 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2137 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2137 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2137 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43426] VGAM2138 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2138 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2138 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2138 host target protein, herein schematically

represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43427] VGAM2139 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2139 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2139 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2139 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43428] VGAM2140 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2140 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2140 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA

into VGAM2140 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[43429] VGAM2141 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2141 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2141 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2141 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[43430] VGAM2142 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2142 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2142 host target RNA, herein

schematically represented by VGAM7 HOST TARGET RNA into VGAM2142 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[43431] VGAM2143 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM2143 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2143 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM2143 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[43432] It is appreciated that a function of VGR3187 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3187 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3187 gene, herein designated VGR GENE, correlate with, and

may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3187 gene: VGAM2136 host target protein, VGAM2137 host target protein, VGAM2138 host target protein, VGAM2139 host target protein, VGAM2140 host target protein, VGAM2141 host target protein, VGAM2142 host target protein and VGAM2143 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2136, VGAM2137, VGAM2138, VGAM2139, VGAM2140, VGAM2141, VGAM2142 and VGAM2143

[43433] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3188(VGR3188) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43434] VGR3188 gene, herein designated VGR GENE, is a novel

bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3188 gene was detected is described hereinabove with reference to Figs. 6–15.

[43435] VGR3188 gene encodes VGR3188 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43436] VGR3188 precursor RNA folds spatially, forming VGR3188 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3188 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3188 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[43437] VGR3188 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate VGAM precursor RNAs, VGAM2144 precursor RNA and VGAM2145 precursor RNA, herein schematically represented by

VGAM1 PRECURSOR and VGAM2 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43438] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2144 RNA and VGAM2145 RNA respectively, herein schematically represented by VGAM1 RNA and VGAM2 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43439] VGAM2144 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2144 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2144 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2144 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43440] VGAM2145 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2145 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2145 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2145 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43441] It is appreciated that a function of VGR3188 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3188 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3188 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3188 gene: VGAM2144 host target protein and VGAM2145 host target protein,

herein schematically represented by VGAM1 HOST TARGET PROTEIN and VGAM HOST TARGET PROTEIN respectively.

The function of these host target genes is elaborated hereinabove with reference to VGAM2144 and VGAM2145

[43442] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3189(VGR3189) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43443] VGR3189 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3189 gene was detected is described hereinabove with reference to Figs. 6–15.

[43444] VGR3189 gene encodes VGR3189 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43445] VGR3189 precursor RNA folds spatially, forming VGR3189 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3189 folded

precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3189 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[43446] VGR3189 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 7 separate VGAM precursor RNAs, VGAM2146 precursor RNA, VGAM2147 precursor RNA, VGAM2148 precursor RNA, VGAM2149 precursor RNA, VGAM2150 precursor RNA, VGAM2151 precursor RNA and VGAM2152 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR and VGAM7 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43447] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA

segments of about 22 nucleotides in length, VGAM2146 RNA, VGAM2147 RNA, VGAM2148 RNA, VGAM2149 RNA, VGAM2150 RNA, VGAM2151 RNA and VGAM2152 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA and VGAM7 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43448] VGAM2146 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2146 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2146 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2146 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43449] VGAM2147 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2147 host target RNA, herein schematically represented by VGAM2

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2147 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2147 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43450] VGAM2148 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2148 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2148 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2148 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43451] VGAM2149 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2149 host

target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2149 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2149 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43452] VGAM2150 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2150 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2150 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2150 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[43453] VGAM2151 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding

site located in an untranslated region of VGAM2151 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2151 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2151 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[43454] VGAM2152 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2152 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2152 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM2152 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[43455] It is appreciated that a function of VGR3189 gene, herein

designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3189 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3189 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3189 gene: VGAM2146 host target protein, VGAM2147 host target protein, VGAM2148 host target protein, VGAM2149 host target protein, VGAM2150 host target protein, VGAM2151 host target protein and VGAM2152 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2146, VGAM2147, VGAM2148, VGAM2149, VGAM2150, VGAM2151 and VGAM2152

[43456] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3190(VGR3190) viral gene, which encodes an operon-like cluster of novel viral

micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43457] VGR3190 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3190 gene was detected is described hereinabove with reference to Figs. 6–15.

[43458] VGR3190 gene encodes VGR3190 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43459] VGR3190 precursor RNA folds spatially, forming VGR3190 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3190 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3190 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[43460] VGR3190 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate VGAM precursor RNAs, VGAM2153 precursor RNA and VGAM2154 precursor RNA, herein schematically represented by VGAM1 PRECURSOR and VGAM2 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43461] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2153 RNA and VGAM2154 RNA respectively, herein schematically represented by VGAM1 RNA and VGAM2 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43462] VGAM2153 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2153 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby in-

hibiting translation of VGAM2153 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2153 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43463] VGAM2154 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2154 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2154 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2154 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43464] It is appreciated that a function of VGR3190 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3190 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3190

gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3190 gene: VGAM2153 host target protein and VGAM2154 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN and VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2153 and VGAM2154

[43465] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3191(VGR3191) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43466] VGR3191 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3191 gene was detected is described hereinabove with reference to Figs. 6-15.

[43467] VGR3191 gene encodes VGR3191 precursor RNA, herein

designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43468] VGR3191 precursor RNA folds spatially, forming VGR3191 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3191 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3191 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[43469] VGR3191 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 6 separate VGAM precursor RNAs, VGAM2155 precursor RNA, VGAM2156 precursor RNA, VGAM2157 precursor RNA, VGAM2158 precursor RNA, VGAM2159 precursor RNA and VGAM2160 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR and VGAM6 PRECURSOR respectively, each of which VGAM

precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43470] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2155 RNA, VGAM2156 RNA, VGAM2157 RNA, VGAM2158 RNA, VGAM2159 RNA and VGAM2160 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA and VGAM6 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43471] VGAM2155 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2155 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2155 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2155 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43472] VGAM2156 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2156 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2156 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2156 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43473] VGAM2157 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2157 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2157 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2157 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of

Fig. 1.

[43474] VGAM2158 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2158 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2158 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2158 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43475] VGAM2159 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2159 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2159 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2159 host target protein, herein schematically

represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[43476] VGAM2160 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2160 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2160 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2160 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[43477] It is appreciated that a function of VGR3191 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3191 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3191 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in

the operon-like cluster of VGR3191 gene: VGAM2155 host target protein, VGAM2156 host target protein, VGAM2157 host target protein, VGAM2158 host target protein, VGAM2159 host target protein and VGAM2160 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2155, VGAM2156, VGAM2157, VGAM2158, VGAM2159 and VGAM2160

[43478] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3192(VGR3192) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43479] VGR3192 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3192 gene was detected is described hereinabove with reference to Figs. 6-15.

[43480] VGR3192 gene encodes VGR3192 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43481] VGR3192 precursor RNA folds spatially, forming VGR3192 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3192 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3192 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[43482] VGR3192 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM2161 precursor RNA, VGAM2162 precursor RNA, VGAM2163 precursor RNA, VGAM2164 precursor RNA, VGAM2165 precursor RNA, VGAM2166 precursor RNA, VGAM2167 precursor RNA and VGAM2168 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRE-

CURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43483] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2161 RNA, VGAM2162 RNA, VGAM2163 RNA, VGAM2164 RNA, VGAM2165 RNA, VGAM2166 RNA, VGAM2167 RNA and VGAM2168 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43484] VGAM2161 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2161 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2161 host target RNA, herein

schematically represented by VGAM1 HOST TARGET RNA into VGAM2161 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43485] VGAM2162 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2162 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2162 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2162 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43486] VGAM2163 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2163 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby in-

hibiting translation of VGAM2163 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2163 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43487] VGAM2164 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2164 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2164 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2164 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43488] VGAM2165 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2165 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2165 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2165 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[43489] VGAM2166 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2166 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2166 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2166 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[43490] VGAM2167 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2167 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2167 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM2167 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[43491] VGAM2168 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM2168 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2168 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM2168 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[43492] It is appreciated that a function of VGR3192 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3192 gene include

diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3192 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3192 gene: VGAM2161 host target protein, VGAM2162 host target protein, VGAM2163 host target protein, VGAM2164 host target protein, VGAM2165 host target protein, VGAM2166 host target protein, VGAM2167 host target protein and VGAM2168 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2161, VGAM2162, VGAM2163, VGAM2164, VGAM2165, VGAM2166, VGAM2167 and VGAM2168

[43493] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3193(VGR3193) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function

and utility of which at least one host target gene is known in the art.

[43494] VGR3193 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3193 gene was detected is described hereinabove with reference to Figs. 6–15.

[43495] VGR3193 gene encodes VGR3193 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43496] VGR3193 precursor RNA folds spatially, forming VGR3193 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3193 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3193 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[43497] VGR3193 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellu–

lar enzymatic activity into at least 5 separate VGAM precursor RNAs, VGAM2169 precursor RNA, VGAM2170 precursor RNA, VGAM2171 precursor RNA, VGAM2172 precursor RNA and VGAM2173 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR and VGAM5 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43498] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2169 RNA, VGAM2170 RNA, VGAM2171 RNA, VGAM2172 RNA and VGAM2173 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA and VGAM5 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43499] VGAM2169 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2169 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2169 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2169 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43500] VGAM2170 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2170 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2170 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2170 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43501] VGAM2171 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2171 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2171 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2171 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43502] VGAM2172 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2172 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2172 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2172 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43503] VGAM2173 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2173 host target RNA, herein schematically represented by VGAM5

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2173 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2173 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[43504] It is appreciated that a function of VGR3193 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3193 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3193 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3193 gene: VGAM2169 host target protein, VGAM2170 host target protein, VGAM2171 host target protein, VGAM2172 host target protein and VGAM2173 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively.

The function of these host target genes is elaborated hereinabove with reference to VGAM2169, VGAM2170, VGAM2171, VGAM2172 and VGAM2173

[43505] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3194(VGR3194) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43506] VGR3194 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3194 gene was detected is described hereinabove with reference to Figs. 6–15.

[43507] VGR3194 gene encodes VGR3194 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43508] VGR3194 precursor RNA folds spatially, forming VGR3194 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3194 folded precursor RNA, herein designated VGR FOLDED PRECUR-

SOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3194 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[43509] VGR3194 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 6 separate VGAM precursor RNAs, VGAM2174 precursor RNA, VGAM2175 precursor RNA, VGAM2176 precursor RNA, VGAM2177 precursor RNA, VGAM2178 precursor RNA and VGAM2179 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR and VGAM6 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43510] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2174 RNA, VGAM2175 RNA, VGAM2176 RNA, VGAM2177 RNA,

VGAM2178 RNA and VGAM2179 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA and VGAM6 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43511] VGAM2174 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2174 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2174 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2174 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43512] VGAM2175 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2175 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2175 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2175 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43513] VGAM2176 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2176 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2176 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2176 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43514] VGAM2177 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2177 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2177 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2177 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43515] VGAM2178 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2178 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2178 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2178 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[43516] VGAM2179 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2179 host target RNA, herein schematically represented by VGAM6

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2179 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2179 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[43517] It is appreciated that a function of VGR3194 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3194 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3194 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3194 gene: VGAM2174 host target protein, VGAM2175 host target protein, VGAM2176 host target protein, VGAM2177 host target protein, VGAM2178 host target protein and VGAM2179 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TAR-

GET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2174, VGAM2175, VGAM2176, VGAM2177, VGAM2178 and VGAM2179

[43518] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3195(VGR3195) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43519] VGR3195 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3195 gene was detected is described hereinabove with reference to Figs. 6–15.

[43520] VGR3195 gene encodes VGR3195 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43521] VGR3195 precursor RNA folds spatially, forming VGR3195 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3195 folded

precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3195 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[43522] VGR3195 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate VGAM precursor RNAs, VGAM2180 precursor RNA, VGAM2181 precursor RNA, VGAM2182 precursor RNA and VGAM2183 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR and VGAM4 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43523] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2180 RNA, VGAM2181 RNA, VGAM2182 RNA and VGAM2183

RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA and VGAM4 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43524] VGAM2180 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2180 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2180 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2180 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43525] VGAM2181 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2181 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby in-

hibiting translation of VGAM2181 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2181 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43526] VGAM2182 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2182 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2182 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2182 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43527] VGAM2183 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2183 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2183 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2183 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43528] It is appreciated that a function of VGR3195 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3195 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3195 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3195 gene: VGAM2180 host target protein, VGAM2181 host target protein, VGAM2182 host target protein and VGAM2183 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2180, VGAM2181, VGAM2182 and VGAM2183

[43529] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3196(VGR3196) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43530] VGR3196 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3196 gene was detected is described hereinabove with reference to Figs. 6–15.

[43531] VGR3196 gene encodes VGR3196 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43532] VGR3196 precursor RNA folds spatially, forming VGR3196 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3196 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3196 precu-

sor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[43533] VGR3196 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM2184 precursor RNA, VGAM2185 precursor RNA, VGAM2186 precursor RNA, VGAM2187 precursor RNA, VGAM2188 precursor RNA, VGAM2189 precursor RNA, VGAM2190 precursor RNA and VGAM2191 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43534] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2184 RNA, VGAM2185 RNA, VGAM2186 RNA, VGAM2187 RNA, VGAM2188 RNA, VGAM2189 RNA, VGAM2190 RNA and

VGAM2191 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43535] VGAM2184 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2184 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2184 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2184 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43536] VGAM2185 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2185 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2185 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2185 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43537] VGAM2186 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2186 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2186 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2186 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43538] VGAM2187 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2187 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2187 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2187 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43539] VGAM2188 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2188 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2188 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2188 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[43540] VGAM2189 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2189 host target RNA, herein schematically represented by VGAM6

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2189 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2189 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[43541] VGAM2190 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2190 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2190 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM2190 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[43542] VGAM2191 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM2191 host

target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2191 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM2191 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[43543] It is appreciated that a function of VGR3196 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3196 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3196 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3196 gene: VGAM2184 host target protein, VGAM2185 host target protein, VGAM2186 host target protein, VGAM2187 host target protein, VGAM2188 host target protein, VGAM2189 host target protein, VGAM2190 host target protein and

VGAM2191 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2184, VGAM2185, VGAM2186, VGAM2187, VGAM2188, VGAM2189, VGAM2190 and VGAM2191

[43544] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3197(VGR3197) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43545] VGR3197 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3197 gene was detected is described hereinabove with reference to Figs. 6-15.

[43546] VGR3197 gene encodes VGR3197 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43547] VGR3197 precursor RNA folds spatially, forming VGR3197 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3197 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3197 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[43548] VGR3197 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate VGAM precursor RNAs, VGAM2192 precursor RNA, VGAM2193 precursor RNA and VGAM2194 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR and VGAM3 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43549] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA

segments of about 22 nucleotides in length, VGAM2192 RNA, VGAM2193 RNA and VGAM2194 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA and VGAM3 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43550] VGAM2192 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2192 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2192 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2192 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43551] VGAM2193 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2193 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2193 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2193 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43552] VGAM2194 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2194 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2194 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2194 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43553] It is appreciated that a function of VGR3197 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3197 gene include diagnosis, prevention and treatment of viral infection by .

Specific functions, and accordingly utilities, of VGR3197 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3197 gene: VGAM2192 host target protein, VGAM2193 host target protein and VGAM2194 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2192, VGAM2193 and VGAM2194

[43554] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3198(VGR3198) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43555] VGR3198 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3198 gene was detected is described hereinabove with reference to Figs.

6-15.

[43556] VGR3198 gene encodes VGR3198 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43557] VGR3198 precursor RNA folds spatially, forming VGR3198 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3198 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3198 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[43558] VGR3198 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 5 separate VGAM precursor RNAs, VGAM2195 precursor RNA, VGAM2196 precursor RNA, VGAM2197 precursor RNA, VGAM2198 precursor RNA and VGAM2199 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR and

VGAM5 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43559] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2195 RNA, VGAM2196 RNA, VGAM2197 RNA, VGAM2198 RNA and VGAM2199 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA and VGAM5 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43560] VGAM2195 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2195 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2195 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2195 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43561] VGAM2196 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2196 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2196 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2196 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43562] VGAM2197 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2197 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2197 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2197 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of

Fig. 1.

[43563] VGAM2198 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2198 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2198 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2198 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43564] VGAM2199 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2199 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2199 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2199 host target protein, herein schematically

represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[43565] It is appreciated that a function of VGR3198 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3198 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3198 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3198 gene: VGAM2195 host target protein, VGAM2196 host target protein, VGAM2197 host target protein, VGAM2198 host target protein and VGAM2199 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2195, VGAM2196, VGAM2197, VGAM2198 and VGAM2199

[43566] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3199(VGR3199) viral

gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43567] VGR3199 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3199 gene was detected is described hereinabove with reference to Figs. 6–15.

[43568] VGR3199 gene encodes VGR3199 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43569] VGR3199 precursor RNA folds spatially, forming VGR3199 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3199 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3199 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the

second half thereof, as is well known in the art.

[43570] VGR3199 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 7 separate VGAM precursor RNAs, VGAM2200 precursor RNA, VGAM2201 precursor RNA, VGAM2202 precursor RNA, VGAM2203 precursor RNA, VGAM2204 precursor RNA, VGAM2205 precursor RNA and VGAM2206 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR and VGAM7 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43571] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2200 RNA, VGAM2201 RNA, VGAM2202 RNA, VGAM2203 RNA, VGAM2204 RNA, VGAM2205 RNA and VGAM2206 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA and VGAM7 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43572] VGAM2200 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2200 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2200 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2200 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43573] VGAM2201 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2201 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2201 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2201 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of

Fig. 1.

[43574] VGAM2202 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2202 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2202 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2202 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43575] VGAM2203 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2203 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2203 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2203 host target protein, herein schematically

represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43576] VGAM2204 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2204 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2204 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2204 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[43577] VGAM2205 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2205 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2205 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA

into VGAM2205 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[43578] VGAM2206 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2206 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2206 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM2206 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[43579] It is appreciated that a function of VGR3199 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3199 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3199 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target

genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3199 gene: VGAM2200 host target protein, VGAM2201 host target protein, VGAM2202 host target protein, VGAM2203 host target protein, VGAM2204 host target protein, VGAM2205 host target protein and VGAM2206 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2200, VGAM2201, VGAM2202, VGAM2203, VGAM2204, VGAM2205 and VGAM2206

[43580] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3200(VGR3200) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43581] VGR3200 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3200 gene was

detected is described hereinabove with reference to Figs. 6–15.

[43582] VGR3200 gene encodes VGR3200 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43583] VGR3200 precursor RNA folds spatially, forming VGR3200 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3200 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3200 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[43584] VGR3200 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM2207 precursor RNA, VGAM2208 precursor RNA, VGAM2209 precursor RNA, VGAM2210 precursor RNA, VGAM2211 precursor RNA, VGAM2212 precursor RNA, VGAM2213 precursor RNA and VGAM2214

precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43585] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2207 RNA, VGAM2208 RNA, VGAM2209 RNA, VGAM2210 RNA, VGAM2211 RNA, VGAM2212 RNA, VGAM2213 RNA and VGAM2214 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43586] VGAM2207 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2207 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2207 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2207 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43587] VGAM2208 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2208 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2208 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2208 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43588] VGAM2209 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2209 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2209 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2209 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43589] VGAM2210 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2210 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2210 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2210 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43590] VGAM2211 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2211 host target RNA, herein schematically represented by VGAM5

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2211 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2211 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[43591] VGAM2212 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2212 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2212 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2212 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[43592] VGAM2213 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2213 host

target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2213 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM2213 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[43593] VGAM2214 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM2214 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2214 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM2214 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[43594] It is appreciated that a function of VGR3200 gene, herein designated VGR GENE, is inhibition of expression of host

target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3200 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3200 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3200 gene: VGAM2207 host target protein, VGAM2208 host target protein, VGAM2209 host target protein, VGAM2210 host target protein, VGAM2211 host target protein, VGAM2212 host target protein, VGAM2213 host target protein and VGAM2214 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2207, VGAM2208, VGAM2209, VGAM2210, VGAM2211, VGAM2212, VGAM2213 and VGAM2214

[43595] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3201(VGR3201) viral gene, which encodes an operon-like cluster of novel viral

micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43596] VGR3201 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3201 gene was detected is described hereinabove with reference to Figs. 6–15.

[43597] VGR3201 gene encodes VGR3201 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43598] VGR3201 precursor RNA folds spatially, forming VGR3201 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3201 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3201 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[43599] VGR3201 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 6 separate VGAM precursor RNAs, VGAM2215 precursor RNA, VGAM2216 precursor RNA, VGAM2217 precursor RNA, VGAM2218 precursor RNA, VGAM2219 precursor RNA and VGAM2220 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR and VGAM6 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43600] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2215 RNA, VGAM2216 RNA, VGAM2217 RNA, VGAM2218 RNA, VGAM2219 RNA and VGAM2220 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA and VGAM6 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43601] VGAM2215 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding

site located in an untranslated region of VGAM2215 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2215 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2215 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43602] VGAM2216 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2216 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2216 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2216 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43603] VGAM2217 RNA, herein schematically represented by

VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2217 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2217 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2217 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43604] VGAM2218 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2218 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2218 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2218 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43605] VGAM2219 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2219 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2219 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2219 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[43606] VGAM2220 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2220 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2220 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2220 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of

Fig. 1.

[43607] It is appreciated that a function of VGR3201 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3201 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3201 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3201 gene: VGAM2215 host target protein, VGAM2216 host target protein, VGAM2217 host target protein, VGAM2218 host target protein, VGAM2219 host target protein and VGAM2220 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2215, VGAM2216, VGAM2217, VGAM2218, VGAM2219 and VGAM2220

[43608] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3202(VGR3202) viral

gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43609] VGR3202 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3202 gene was detected is described hereinabove with reference to Figs. 6–15.

[43610] VGR3202 gene encodes VGR3202 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43611] VGR3202 precursor RNA folds spatially, forming VGR3202 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3202 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3202 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the

second half thereof, as is well known in the art.

[43612] VGR3202 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM2221 precursor RNA, VGAM2222 precursor RNA, VGAM2223 precursor RNA, VGAM2224 precursor RNA, VGAM2225 precursor RNA, VGAM2226 precursor RNA, VGAM2227 precursor RNA and VGAM2228 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43613] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2221 RNA, VGAM2222 RNA, VGAM2223 RNA, VGAM2224 RNA, VGAM2225 RNA, VGAM2226 RNA, VGAM2227 RNA and VGAM2228 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8

RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43614] VGAM2221 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2221 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2221 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2221 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43615] VGAM2222 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2222 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2222 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA

into VGAM2222 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43616] VGAM2223 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2223 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2223 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2223 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43617] VGAM2224 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2224 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2224 host target RNA, herein

schematically represented by VGAM4 HOST TARGET RNA into VGAM2224 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43618] VGAM2225 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2225 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2225 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2225 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[43619] VGAM2226 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2226 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby in-

hibiting translation of VGAM2226 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2226 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[43620] VGAM2227 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2227 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2227 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM2227 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[43621] VGAM2228 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM2228 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2228 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM2228 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[43622] It is appreciated that a function of VGR3202 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3202 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3202 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3202 gene: VGAM2221 host target protein, VGAM2222 host target protein, VGAM2223 host target protein, VGAM2224 host target protein, VGAM2225 host target protein, VGAM2226 host target protein, VGAM2227 host target protein and VGAM2228 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function

of these host target genes is elaborated hereinabove with reference to VGAM2221, VGAM2222, VGAM2223, VGAM2224, VGAM2225, VGAM2226, VGAM2227 and VGAM2228

[43623] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3203(VGR3203) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43624] VGR3203 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3203 gene was detected is described hereinabove with reference to Figs. 6–15.

[43625] VGR3203 gene encodes VGR3203 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43626] VGR3203 precursor RNA folds spatially, forming VGR3203 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3203 folded

precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3203 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[43627] VGR3203 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate VGAM precursor RNAs, VGAM2229 precursor RNA, VGAM2230 precursor RNA and VGAM2231 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR and VGAM3 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43628] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2229 RNA, VGAM2230 RNA and VGAM2231 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2

RNA and VGAM3 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43629] VGAM2229 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2229 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2229 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2229 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43630] VGAM2230 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2230 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2230 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA

into VGAM2230 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43631] VGAM2231 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2231 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2231 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2231 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43632] It is appreciated that a function of VGR3203 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3203 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3203 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target

genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3203 gene: VGAM2229 host target protein, VGAM2230 host target protein and VGAM2231 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2229, VGAM2230 and VGAM2231

[43633] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3204(VGR3204) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43634] VGR3204 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3204 gene was detected is described hereinabove with reference to Figs. 6–15.

[43635] VGR3204 gene encodes VGR3204 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typi-

cally several hundred nucleotides long.

[43636] VGR3204 precursor RNA folds spatially, forming VGR3204 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3204 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3204 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[43637] VGR3204 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM2232 precursor RNA, VGAM2233 precursor RNA, VGAM2234 precursor RNA, VGAM2235 precursor RNA, VGAM2236 precursor RNA, VGAM2237 precursor RNA, VGAM2238 precursor RNA and VGAM2239 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRE-

CURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43638] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2232 RNA, VGAM2233 RNA, VGAM2234 RNA, VGAM2235 RNA, VGAM2236 RNA, VGAM2237 RNA, VGAM2238 RNA and VGAM2239 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43639] VGAM2232 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2232 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2232 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2232 host target protein, herein schematically

represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43640] VGAM2233 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2233 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2233 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2233 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43641] VGAM2234 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2234 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2234 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA

into VGAM2234 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43642] VGAM2235 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2235 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2235 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2235 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43643] VGAM2236 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2236 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2236 host target RNA, herein

schematically represented by VGAM5 HOST TARGET RNA into VGAM2236 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[43644] VGAM2237 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2237 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2237 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2237 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[43645] VGAM2238 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2238 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby in-

hibiting translation of VGAM2238 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM2238 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[43646] VGAM2239 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM2239 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2239 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM2239 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[43647] It is appreciated that a function of VGR3204 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3204 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3204

gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3204 gene: VGAM2232 host target protein, VGAM2233 host target protein, VGAM2234 host target protein, VGAM2235 host target protein, VGAM2236 host target protein, VGAM2237 host target protein, VGAM2238 host target protein and VGAM2239 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2232, VGAM2233, VGAM2234, VGAM2235, VGAM2236, VGAM2237, VGAM2238 and VGAM2239

[43648] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3205(VGR3205) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43649] VGR3205 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3205 gene was detected is described hereinabove with reference to Figs. 6–15.

[43650] VGR3205 gene encodes VGR3205 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43651] VGR3205 precursor RNA folds spatially, forming VGR3205 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3205 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3205 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[43652] VGR3205 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 7 separate VGAM precursor RNAs, VGAM2240 precursor RNA, VGAM2241 pre–

cursor RNA, VGAM2242 precursor RNA, VGAM2243 precursor RNA, VGAM2244 precursor RNA, VGAM2245 precursor RNA and VGAM2246 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR and VGAM7 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43653] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2240 RNA, VGAM2241 RNA, VGAM2242 RNA, VGAM2243 RNA, VGAM2244 RNA, VGAM2245 RNA and VGAM2246 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA and VGAM7 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43654] VGAM2240 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2240 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2240 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2240 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43655] VGAM2241 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2241 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2241 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2241 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43656] VGAM2242 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2242 host target RNA, herein schematically represented by VGAM3

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2242 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2242 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43657] VGAM2243 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2243 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2243 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2243 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43658] VGAM2244 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2244 host

target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2244 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2244 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[43659] VGAM2245 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2245 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2245 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2245 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[43660] VGAM2246 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding

site located in an untranslated region of VGAM2246 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2246 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM2246 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[43661] It is appreciated that a function of VGR3205 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3205 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3205 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3205 gene: VGAM2240 host target protein, VGAM2241 host target protein, VGAM2242 host target protein, VGAM2243 host target protein, VGAM2244 host target protein, VGAM2245 host

target protein and VGAM2246 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2240, VGAM2241, VGAM2242, VGAM2243, VGAM2244, VGAM2245 and VGAM2246

[43662] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3206(VGR3206) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43663] VGR3206 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3206 gene was detected is described hereinabove with reference to Figs. 6-15.

[43664] VGR3206 gene encodes VGR3206 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43665] VGR3206 precursor RNA folds spatially, forming VGR3206 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3206 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3206 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[43666] VGR3206 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 7 separate VGAM precursor RNAs, VGAM2247 precursor RNA, VGAM2248 precursor RNA, VGAM2249 precursor RNA, VGAM2250 precursor RNA, VGAM2251 precursor RNA, VGAM2252 precursor RNA and VGAM2253 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR and VGAM7 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to

VGAM PRECURSOR RNA of Fig. 8.

[43667] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2247 RNA, VGAM2248 RNA, VGAM2249 RNA, VGAM2250 RNA, VGAM2251 RNA, VGAM2252 RNA and VGAM2253 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA and VGAM7 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43668] VGAM2247 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2247 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2247 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2247 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43669] VGAM2248 RNA, herein schematically represented by

VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2248 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2248 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2248 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43670] VGAM2249 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2249 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2249 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2249 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43671] VGAM2250 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2250 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2250 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2250 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43672] VGAM2251 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2251 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2251 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2251 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of

Fig. 1.

[43673] VGAM2252 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2252 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2252 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2252 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[43674] VGAM2253 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2253 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2253 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM2253 host target protein, herein schematically

represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[43675] It is appreciated that a function of VGR3206 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3206 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3206 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3206 gene: VGAM2247 host target protein, VGAM2248 host target protein, VGAM2249 host target protein, VGAM2250 host target protein, VGAM2251 host target protein, VGAM2252 host target protein and VGAM2253 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2247, VGAM2248, VGAM2249, VGAM2250, VGAM2251, VGAM2252 and VGAM2253

[43676] Fig. 9 further provides a conceptual description of novel

bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3207(VGR3207) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43677] VGR3207 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3207 gene was detected is described hereinabove with reference to Figs. 6–15.

[43678] VGR3207 gene encodes VGR3207 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43679] VGR3207 precursor RNA folds spatially, forming VGR3207 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3207 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3207 precursor RNA comprises a plurality of segments, the first half

of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[43680] VGR3207 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate VGAM precursor RNAs, VGAM2254 precursor RNA and VGAM2255 precursor RNA, herein schematically represented by VGAM1 PRECURSOR and VGAM2 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43681] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2254 RNA and VGAM2255 RNA respectively, herein schematically represented by VGAM1 RNA and VGAM2 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43682] VGAM2254 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2254 host target RNA, herein schematically represented by VGAM1

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2254 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2254 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43683] VGAM2255 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2255 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2255 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2255 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43684] It is appreciated that a function of VGR3207 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attack–

ing a host. Accordingly, utilities of VGR3207 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3207 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3207 gene: VGAM2254 host target protein and VGAM2255 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN and VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2254 and VGAM2255

[43685] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3208(VGR3208) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43686] VGR3208 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3208 gene was

detected is described hereinabove with reference to Figs. 6–15.

[43687] VGR3208 gene encodes VGR3208 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43688] VGR3208 precursor RNA folds spatially, forming VGR3208 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3208 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3208 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[43689] VGR3208 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate VGAM precursor RNAs, VGAM2256 precursor RNA, VGAM2257 precursor RNA and VGAM2258 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR and VGAM3 PRECURSOR respectively, each of

which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43690] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2256 RNA, VGAM2257 RNA and VGAM2258 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA and VGAM3 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43691] VGAM2256 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2256 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2256 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2256 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43692] VGAM2257 RNA, herein schematically represented by

VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2257 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2257 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2257 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43693] VGAM2258 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2258 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2258 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2258 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43694] It is appreciated that a function of VGR3208 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3208 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3208 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3208 gene: VGAM2256 host target protein, VGAM2257 host target protein and VGAM2258 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2256, VGAM2257 and VGAM2258

[43695] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3209(VGR3209) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known

in the art.

[43696] VGR3209 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3209 gene was detected is described hereinabove with reference to Figs. 6–15.

[43697] VGR3209 gene encodes VGR3209 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43698] VGR3209 precursor RNA folds spatially, forming VGR3209 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3209 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3209 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[43699] VGR3209 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM pre–

cursor RNAs, VGAM2259 precursor RNA, VGAM2260 precursor RNA, VGAM2261 precursor RNA, VGAM2262 precursor RNA, VGAM2263 precursor RNA, VGAM2264 precursor RNA, VGAM2265 precursor RNA and VGAM2266 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43700] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2259 RNA, VGAM2260 RNA, VGAM2261 RNA, VGAM2262 RNA, VGAM2263 RNA, VGAM2264 RNA, VGAM2265 RNA and VGAM2266 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43701] VGAM2259 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding

site located in an untranslated region of VGAM2259 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2259 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2259 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43702] VGAM2260 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2260 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2260 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2260 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43703] VGAM2261 RNA, herein schematically represented by

VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2261 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2261 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2261 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43704] VGAM2262 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2262 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2262 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2262 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43705] VGAM2263 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2263 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2263 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2263 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[43706] VGAM2264 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2264 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2264 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2264 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of

Fig. 1.

[43707] VGAM2265 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2265 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2265 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM2265 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[43708] VGAM2266 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM2266 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2266 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM2266 host target protein, herein schematically

represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[43709] It is appreciated that a function of VGR3209 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3209 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3209 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3209 gene: VGAM2259 host target protein, VGAM2260 host target protein, VGAM2261 host target protein, VGAM2262 host target protein, VGAM2263 host target protein, VGAM2264 host target protein, VGAM2265 host target protein and VGAM2266 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2259, VGAM2260, VGAM2261, VGAM2262, VGAM2263, VGAM2264, VGAM2265 and VGAM2266

[43710] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3210(VGR3210) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43711] VGR3210 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3210 gene was detected is described hereinabove with reference to Figs. 6–15.

[43712] VGR3210 gene encodes VGR3210 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43713] VGR3210 precursor RNA folds spatially, forming VGR3210 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3210 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3210 precursor

sor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[43714] VGR3210 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM2267 precursor RNA, VGAM2268 precursor RNA, VGAM2269 precursor RNA, VGAM2270 precursor RNA, VGAM2271 precursor RNA, VGAM2272 precursor RNA, VGAM2273 precursor RNA and VGAM2274 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43715] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2267 RNA, VGAM2268 RNA, VGAM2269 RNA, VGAM2270 RNA, VGAM2271 RNA, VGAM2272 RNA, VGAM2273 RNA and

VGAM2274 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43716] VGAM2267 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2267 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2267 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2267 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43717] VGAM2268 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2268 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2268 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2268 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43718] VGAM2269 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2269 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2269 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2269 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43719] VGAM2270 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2270 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2270 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2270 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43720] VGAM2271 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2271 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2271 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2271 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[43721] VGAM2272 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2272 host target RNA, herein schematically represented by VGAM6

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2272 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2272 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[43722] VGAM2273 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2273 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2273 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM2273 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[43723] VGAM2274 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM2274 host

target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2274 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM2274 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[43724] It is appreciated that a function of VGR3210 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3210 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3210 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3210 gene: VGAM2267 host target protein, VGAM2268 host target protein, VGAM2269 host target protein, VGAM2270 host target protein, VGAM2271 host target protein, VGAM2272 host target protein, VGAM2273 host target protein and

VGAM2274 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2267, VGAM2268, VGAM2269, VGAM2270, VGAM2271, VGAM2272, VGAM2273 and VGAM2274

[43725] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3211(VGR3211) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43726] VGR3211 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3211 gene was detected is described hereinabove with reference to Figs. 6-15.

[43727] VGR3211 gene encodes VGR3211 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43728] VGR3211 precursor RNA folds spatially, forming VGR3211 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3211 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3211 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[43729] VGR3211 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 6 separate VGAM precursor RNAs, VGAM2275 precursor RNA, VGAM2276 precursor RNA, VGAM2277 precursor RNA, VGAM2278 precursor RNA, VGAM2279 precursor RNA and VGAM2280 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR and VGAM6 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43730] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2275 RNA, VGAM2276 RNA, VGAM2277 RNA, VGAM2278 RNA, VGAM2279 RNA and VGAM2280 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA and VGAM6 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43731] VGAM2275 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2275 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2275 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2275 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43732] VGAM2276 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding

site located in an untranslated region of VGAM2276 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2276 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2276 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43733] VGAM2277 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2277 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2277 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2277 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43734] VGAM2278 RNA, herein schematically represented by

VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2278 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2278 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2278 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43735] VGAM2279 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2279 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2279 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2279 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[43736] VGAM2280 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2280 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2280 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2280 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[43737] It is appreciated that a function of VGR3211 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3211 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3211 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3211 gene: VGAM2275 host target protein, VGAM2276 host target protein,

VGAM2277 host target protein, VGAM2278 host target protein, VGAM2279 host target protein and VGAM2280 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2275, VGAM2276, VGAM2277, VGAM2278, VGAM2279 and VGAM2280

[43738] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3212(VGR3212) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43739] VGR3212 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3212 gene was detected is described hereinabove with reference to Figs. 6–15.

[43740] VGR3212 gene encodes VGR3212 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typi-

cally several hundred nucleotides long.

[43741] VGR3212 precursor RNA folds spatially, forming VGR3212 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3212 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3212 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[43742] VGR3212 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM2281 precursor RNA, VGAM2282 precursor RNA, VGAM2283 precursor RNA, VGAM2284 precursor RNA, VGAM2285 precursor RNA, VGAM2286 precursor RNA, VGAM2287 precursor RNA and VGAM2288 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRE-

CURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43743] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2281 RNA, VGAM2282 RNA, VGAM2283 RNA, VGAM2284 RNA, VGAM2285 RNA, VGAM2286 RNA, VGAM2287 RNA and VGAM2288 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43744] VGAM2281 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2281 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2281 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2281 host target protein, herein schematically

represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43745] VGAM2282 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2282 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2282 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2282 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43746] VGAM2283 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2283 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2283 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA

into VGAM2283 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43747] VGAM2284 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2284 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2284 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2284 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43748] VGAM2285 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2285 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2285 host target RNA, herein

schematically represented by VGAM5 HOST TARGET RNA into VGAM2285 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[43749] VGAM2286 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2286 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2286 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2286 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[43750] VGAM2287 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2287 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby in-

hibiting translation of VGAM2287 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM2287 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[43751] VGAM2288 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM2288 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2288 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM2288 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[43752] It is appreciated that a function of VGR3212 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3212 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3212

gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3212 gene: VGAM2281 host target protein, VGAM2282 host target protein, VGAM2283 host target protein, VGAM2284 host target protein, VGAM2285 host target protein, VGAM2286 host target protein, VGAM2287 host target protein and VGAM2288 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2281, VGAM2282, VGAM2283, VGAM2284, VGAM2285, VGAM2286, VGAM2287 and VGAM2288

[43753] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3213(VGR3213) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43754] VGR3213 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3213 gene was detected is described hereinabove with reference to Figs. 6–15.

[43755] VGR3213 gene encodes VGR3213 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43756] VGR3213 precursor RNA folds spatially, forming VGR3213 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3213 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3213 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[43757] VGR3213 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 6 separate VGAM precursor RNAs, VGAM2289 precursor RNA, VGAM2290 pre–

cursor RNA, VGAM2291 precursor RNA, VGAM2292 precursor RNA, VGAM2293 precursor RNA and VGAM2294 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR and VGAM6 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43758] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2289 RNA, VGAM2290 RNA, VGAM2291 RNA, VGAM2292 RNA, VGAM2293 RNA and VGAM2294 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA and VGAM6 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43759] VGAM2289 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2289 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2289 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2289 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43760] VGAM2290 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2290 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2290 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2290 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43761] VGAM2291 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2291 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2291 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2291 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43762] VGAM2292 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2292 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2292 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2292 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43763] VGAM2293 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2293 host target RNA, herein schematically represented by VGAM5

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2293 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2293 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[43764] VGAM2294 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2294 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2294 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2294 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[43765] It is appreciated that a function of VGR3213 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attack–

ing a host. Accordingly, utilities of VGR3213 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3213 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3213 gene: VGAM2289 host target protein, VGAM2290 host target protein, VGAM2291 host target protein, VGAM2292 host target protein, VGAM2293 host target protein and VGAM2294 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2289, VGAM2290, VGAM2291, VGAM2292, VGAM2293 and VGAM2294

[43766] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3214(VGR3214) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known

in the art.

[43767] VGR3214 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3214 gene was detected is described hereinabove with reference to Figs. 6–15.

[43768] VGR3214 gene encodes VGR3214 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43769] VGR3214 precursor RNA folds spatially, forming VGR3214 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3214 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3214 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[43770] VGR3214 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM pre–

cursor RNAs, VGAM2295 precursor RNA, VGAM2296 precursor RNA, VGAM2297 precursor RNA, VGAM2298 precursor RNA, VGAM2299 precursor RNA, VGAM2300 precursor RNA, VGAM2301 precursor RNA and VGAM2302 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43771] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2295 RNA, VGAM2296 RNA, VGAM2297 RNA, VGAM2298 RNA, VGAM2299 RNA, VGAM2300 RNA, VGAM2301 RNA and VGAM2302 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43772] VGAM2295 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding

site located in an untranslated region of VGAM2295 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2295 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2295 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43773] VGAM2296 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2296 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2296 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2296 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43774] VGAM2297 RNA, herein schematically represented by

VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2297 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2297 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2297 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43775] VGAM2298 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2298 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2298 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2298 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43776] VGAM2299 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2299 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2299 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2299 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[43777] VGAM2300 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2300 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2300 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2300 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of

Fig. 1.

[43778] VGAM2301 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2301 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2301 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM2301 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[43779] VGAM2302 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM2302 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2302 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM2302 host target protein, herein schematically

represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[43780] It is appreciated that a function of VGR3214 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3214 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3214 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3214 gene: VGAM2295 host target protein, VGAM2296 host target protein, VGAM2297 host target protein, VGAM2298 host target protein, VGAM2299 host target protein, VGAM2300 host target protein, VGAM2301 host target protein and VGAM2302 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2295, VGAM2296, VGAM2297, VGAM2298, VGAM2299, VGAM2300, VGAM2301 and VGAM2302

[43781] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3215(VGR3215) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43782] VGR3215 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3215 gene was detected is described hereinabove with reference to Figs. 6–15.

[43783] VGR3215 gene encodes VGR3215 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43784] VGR3215 precursor RNA folds spatially, forming VGR3215 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3215 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3215 precu-

sor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[43785] VGR3215 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate VGAM precursor RNAs, VGAM2303 precursor RNA, VGAM2304 precursor RNA, VGAM2305 precursor RNA and VGAM2306 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR and VGAM4 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43786] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2303 RNA, VGAM2304 RNA, VGAM2305 RNA and VGAM2306 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA and VGAM4 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43787] VGAM2303 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2303 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2303 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2303 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43788] VGAM2304 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2304 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2304 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2304 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of

Fig. 1.

[43789] VGAM2305 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2305 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2305 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2305 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43790] VGAM2306 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2306 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2306 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2306 host target protein, herein schematically

represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43791] It is appreciated that a function of VGR3215 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3215 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3215 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3215 gene: VGAM2303 host target protein, VGAM2304 host target protein, VGAM2305 host target protein and VGAM2306 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2303, VGAM2304, VGAM2305 and VGAM2306

[43792] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3216(VGR3216) viral gene, which encodes an operon-like cluster of novel viral

micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43793] VGR3216 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3216 gene was detected is described hereinabove with reference to Figs. 6–15.

[43794] VGR3216 gene encodes VGR3216 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43795] VGR3216 precursor RNA folds spatially, forming VGR3216 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3216 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3216 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[43796] VGR3216 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 7 separate VGAM precursor RNAs, VGAM2307 precursor RNA, VGAM2308 precursor RNA, VGAM2309 precursor RNA, VGAM2310 precursor RNA, VGAM2311 precursor RNA, VGAM2312 precursor RNA and VGAM2313 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR and VGAM7 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43797] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2307 RNA, VGAM2308 RNA, VGAM2309 RNA, VGAM2310 RNA, VGAM2311 RNA, VGAM2312 RNA and VGAM2313 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA and VGAM7 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43798] VGAM2307 RNA, herein schematically represented by

VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2307 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2307 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2307 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43799] VGAM2308 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2308 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2308 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2308 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43800] VGAM2309 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2309 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2309 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2309 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43801] VGAM2310 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2310 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2310 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2310 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of

Fig. 1.

[43802] VGAM2311 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2311 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2311 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2311 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[43803] VGAM2312 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2312 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2312 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2312 host target protein, herein schematically

represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[43804] VGAM2313 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2313 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2313 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM2313 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[43805] It is appreciated that a function of VGR3216 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3216 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3216 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in

the operon-like cluster of VGR3216 gene: VGAM2307 host target protein, VGAM2308 host target protein, VGAM2309 host target protein, VGAM2310 host target protein, VGAM2311 host target protein, VGAM2312 host target protein and VGAM2313 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2307, VGAM2308, VGAM2309, VGAM2310, VGAM2311, VGAM2312 and VGAM2313

[43806] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3217(VGR3217) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43807] VGR3217 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3217 gene was detected is described hereinabove with reference to Figs.

6-15.

[43808] VGR3217 gene encodes VGR3217 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43809] VGR3217 precursor RNA folds spatially, forming VGR3217 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3217 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3217 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[43810] VGR3217 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate VGAM precursor RNAs, VGAM2314 precursor RNA and VGAM2315 precursor RNA, herein schematically represented by VGAM1 PRECURSOR and VGAM2 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECUR-

SOR RNA of Fig. 8.

[43811] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2314 RNA and VGAM2315 RNA respectively, herein schematically represented by VGAM1 RNA and VGAM2 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43812] VGAM2314 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2314 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2314 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2314 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43813] VGAM2315 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2315 host

target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2315 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2315 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43814] It is appreciated that a function of VGR3217 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3217 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3217 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3217 gene: VGAM2314 host target protein and VGAM2315 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN and VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated

hereinabove with reference to VGAM2314 and VGAM2315

[43815] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3218(VGR3218) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43816] VGR3218 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3218 gene was detected is described hereinabove with reference to Figs. 6–15.

[43817] VGR3218 gene encodes VGR3218 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43818] VGR3218 precursor RNA folds spatially, forming VGR3218 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3218 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to

the fact that the nucleotide sequence of VGR3218 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[43819] VGR3218 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM2316 precursor RNA, VGAM2317 precursor RNA, VGAM2318 precursor RNA, VGAM2319 precursor RNA, VGAM2320 precursor RNA, VGAM2321 precursor RNA, VGAM2322 precursor RNA and VGAM2323 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43820] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2316 RNA, VGAM2317 RNA, VGAM2318 RNA, VGAM2319 RNA,

VGAM2320 RNA, VGAM2321 RNA, VGAM2322 RNA and VGAM2323 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43821] VGAM2316 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2316 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2316 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2316 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43822] VGAM2317 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2317 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2317 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2317 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43823] VGAM2318 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2318 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2318 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2318 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43824] VGAM2319 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2319 host target RNA, herein schematically represented by VGAM4

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2319 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2319 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43825] VGAM2320 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2320 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2320 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2320 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[43826] VGAM2321 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2321 host

target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2321 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2321 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[43827] VGAM2322 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2322 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2322 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM2322 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[43828] VGAM2323 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding

site located in an untranslated region of VGAM2323 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2323 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM2323 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[43829] It is appreciated that a function of VGR3218 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3218 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3218 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3218 gene: VGAM2316 host target protein, VGAM2317 host target protein, VGAM2318 host target protein, VGAM2319 host target protein, VGAM2320 host target protein, VGAM2321 host

target protein, VGAM2322 host target protein and VGAM2323 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2316, VGAM2317, VGAM2318, VGAM2319, VGAM2320, VGAM2321, VGAM2322 and VGAM2323

[43830] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3219(VGR3219) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43831] VGR3219 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3219 gene was detected is described hereinabove with reference to Figs. 6–15.

[43832] VGR3219 gene encodes VGR3219 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typi-

cally several hundred nucleotides long.

[43833] VGR3219 precursor RNA folds spatially, forming VGR3219 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3219 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3219 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[43834] VGR3219 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 5 separate VGAM precursor RNAs, VGAM2324 precursor RNA, VGAM2325 precursor RNA, VGAM2326 precursor RNA, VGAM2327 precursor RNA and VGAM2328 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR and VGAM5 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43835] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2324 RNA, VGAM2325 RNA, VGAM2326 RNA, VGAM2327 RNA and VGAM2328 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA and VGAM5 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43836] VGAM2324 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2324 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2324 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2324 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43837] VGAM2325 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2325 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2325 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2325 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of

Fig. 1.

[43838] VGAM2326 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2326 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2326 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2326 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43839] VGAM2327 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2327 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2327 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2327 host target protein, herein schematically

represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43840] VGAM2328 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2328 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2328 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2328 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[43841] It is appreciated that a function of VGR3219 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3219 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3219 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in

the operon-like cluster of VGR3219 gene: VGAM2324 host target protein, VGAM2325 host target protein, VGAM2326 host target protein, VGAM2327 host target protein and VGAM2328 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2324, VGAM2325, VGAM2326, VGAM2327 and VGAM2328

[43842] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3220(VGR3220) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43843] VGR3220 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3220 gene was detected is described hereinabove with reference to Figs. 6-15.

[43844] VGR3220 gene encodes VGR3220 precursor RNA, herein

designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43845] VGR3220 precursor RNA folds spatially, forming VGR3220 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3220 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3220 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[43846] VGR3220 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM2329 precursor RNA, VGAM2330 precursor RNA, VGAM2331 precursor RNA, VGAM2332 precursor RNA, VGAM2333 precursor RNA, VGAM2334 precursor RNA, VGAM2335 precursor RNA and VGAM2336 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR,

VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43847] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2329 RNA, VGAM2330 RNA, VGAM2331 RNA, VGAM2332 RNA, VGAM2333 RNA, VGAM2334 RNA, VGAM2335 RNA and VGAM2336 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43848] VGAM2329 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2329 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2329 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA

into VGAM2329 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43849] VGAM2330 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2330 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2330 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2330 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43850] VGAM2331 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2331 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2331 host target RNA, herein

schematically represented by VGAM3 HOST TARGET RNA into VGAM2331 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43851] VGAM2332 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2332 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2332 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2332 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43852] VGAM2333 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2333 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby in-

hibiting translation of VGAM2333 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2333 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[43853] VGAM2334 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2334 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2334 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2334 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[43854] VGAM2335 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2335 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2335 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM2335 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[43855] VGAM2336 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM2336 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2336 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM2336 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[43856] It is appreciated that a function of VGR3220 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3220 gene include diagnosis, prevention and treatment of viral infection by .

Specific functions, and accordingly utilities, of VGR3220 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3220 gene: VGAM2329 host target protein, VGAM2330 host target protein, VGAM2331 host target protein, VGAM2332 host target protein, VGAM2333 host target protein, VGAM2334 host target protein, VGAM2335 host target protein and VGAM2336 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2329, VGAM2330, VGAM2331, VGAM2332, VGAM2333, VGAM2334, VGAM2335 and VGAM2336

[43857] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3221(VGR3221) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known

in the art.

[43858] VGR3221 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3221 gene was detected is described hereinabove with reference to Figs. 6–15.

[43859] VGR3221 gene encodes VGR3221 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43860] VGR3221 precursor RNA folds spatially, forming VGR3221 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3221 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3221 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[43861] VGR3221 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM pre–

cursor RNAs, VGAM2337 precursor RNA, VGAM2338 precursor RNA, VGAM2339 precursor RNA, VGAM2340 precursor RNA, VGAM2341 precursor RNA, VGAM2342 precursor RNA, VGAM2343 precursor RNA and VGAM2344 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43862] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2337 RNA, VGAM2338 RNA, VGAM2339 RNA, VGAM2340 RNA, VGAM2341 RNA, VGAM2342 RNA, VGAM2343 RNA and VGAM2344 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43863] VGAM2337 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding

site located in an untranslated region of VGAM2337 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2337 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2337 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43864] VGAM2338 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2338 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2338 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2338 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43865] VGAM2339 RNA, herein schematically represented by

VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2339 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2339 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2339 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43866] VGAM2340 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2340 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2340 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2340 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43867] VGAM2341 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2341 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2341 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2341 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[43868] VGAM2342 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2342 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2342 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2342 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of

Fig. 1.

[43869] VGAM2343 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2343 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2343 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM2343 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[43870] VGAM2344 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM2344 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2344 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM2344 host target protein, herein schematically

represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[43871] It is appreciated that a function of VGR3221 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3221 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3221 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3221 gene: VGAM2337 host target protein, VGAM2338 host target protein, VGAM2339 host target protein, VGAM2340 host target protein, VGAM2341 host target protein, VGAM2342 host target protein, VGAM2343 host target protein and VGAM2344 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2337, VGAM2338, VGAM2339, VGAM2340, VGAM2341, VGAM2342, VGAM2343 and VGAM2344

[43872] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3222(VGR3222) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43873] VGR3222 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3222 gene was detected is described hereinabove with reference to Figs. 6–15.

[43874] VGR3222 gene encodes VGR3222 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43875] VGR3222 precursor RNA folds spatially, forming VGR3222 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3222 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3222 precu-

sor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[43876] VGR3222 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM2345 precursor RNA, VGAM2346 precursor RNA, VGAM2347 precursor RNA, VGAM2348 precursor RNA, VGAM2349 precursor RNA, VGAM2350 precursor RNA, VGAM2351 precursor RNA and VGAM2352 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43877] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2345 RNA, VGAM2346 RNA, VGAM2347 RNA, VGAM2348 RNA, VGAM2349 RNA, VGAM2350 RNA, VGAM2351 RNA and

VGAM2352 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43878] VGAM2345 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2345 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2345 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2345 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43879] VGAM2346 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2346 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2346 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2346 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43880] VGAM2347 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2347 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2347 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2347 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43881] VGAM2348 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2348 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2348 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2348 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43882] VGAM2349 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2349 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2349 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2349 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[43883] VGAM2350 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2350 host target RNA, herein schematically represented by VGAM6

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2350 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2350 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[43884] VGAM2351 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2351 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2351 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM2351 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[43885] VGAM2352 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM2352 host

target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2352 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM2352 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[43886] It is appreciated that a function of VGR3222 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3222 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3222 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3222 gene: VGAM2345 host target protein, VGAM2346 host target protein, VGAM2347 host target protein, VGAM2348 host target protein, VGAM2349 host target protein, VGAM2350 host target protein, VGAM2351 host target protein and

VGAM2352 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2345, VGAM2346, VGAM2347, VGAM2348, VGAM2349, VGAM2350, VGAM2351 and VGAM2352

[43887] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3223(VGR3223) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43888] VGR3223 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3223 gene was detected is described hereinabove with reference to Figs. 6-15.

[43889] VGR3223 gene encodes VGR3223 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43890] VGR3223 precursor RNA folds spatially, forming VGR3223 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3223 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3223 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[43891] VGR3223 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM2353 precursor RNA, VGAM2354 precursor RNA, VGAM2355 precursor RNA, VGAM2356 precursor RNA, VGAM2357 precursor RNA, VGAM2358 precursor RNA, VGAM2359 precursor RNA and VGAM2360 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs

being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43892] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2353 RNA, VGAM2354 RNA, VGAM2355 RNA, VGAM2356 RNA, VGAM2357 RNA, VGAM2358 RNA, VGAM2359 RNA and VGAM2360 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43893] VGAM2353 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2353 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2353 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2353 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of

Fig. 1.

[43894] VGAM2354 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2354 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2354 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2354 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43895] VGAM2355 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2355 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2355 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2355 host target protein, herein schematically

represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43896] VGAM2356 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2356 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2356 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2356 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43897] VGAM2357 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2357 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2357 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA

into VGAM2357 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[43898] VGAM2358 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2358 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2358 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2358 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[43899] VGAM2359 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2359 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2359 host target RNA, herein

schematically represented by VGAM7 HOST TARGET RNA into VGAM2359 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[43900] VGAM2360 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM2360 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2360 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM2360 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[43901] It is appreciated that a function of VGR3223 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3223 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3223 gene, herein designated VGR GENE, correlate with, and

may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3223 gene: VGAM2353 host target protein, VGAM2354 host target protein, VGAM2355 host target protein, VGAM2356 host target protein, VGAM2357 host target protein, VGAM2358 host target protein, VGAM2359 host target protein and VGAM2360 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2353, VGAM2354, VGAM2355, VGAM2356, VGAM2357, VGAM2358, VGAM2359 and VGAM2360

[43902] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3224(VGR3224) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43903] VGR3224 gene, herein designated VGR GENE, is a novel

bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3224 gene was detected is described hereinabove with reference to Figs. 6–15.

[43904] VGR3224 gene encodes VGR3224 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43905] VGR3224 precursor RNA folds spatially, forming VGR3224 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3224 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3224 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[43906] VGR3224 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate VGAM precursor RNAs, VGAM2361 precursor RNA, VGAM2362 precursor RNA, VGAM2363 precursor RNA and VGAM2364

precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR and VGAM4 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43907] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2361 RNA, VGAM2362 RNA, VGAM2363 RNA and VGAM2364 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA and VGAM4 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43908] VGAM2361 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2361 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2361 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA

into VGAM2361 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43909] VGAM2362 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2362 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2362 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2362 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43910] VGAM2363 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2363 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2363 host target RNA, herein

schematically represented by VGAM3 HOST TARGET RNA into VGAM2363 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43911] VGAM2364 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2364 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2364 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2364 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43912] It is appreciated that a function of VGR3224 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3224 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3224 gene, herein designated VGR GENE, correlate with, and

may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3224 gene: VGAM2361 host target protein, VGAM2362 host target protein, VGAM2363 host target protein and VGAM2364 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2361, VGAM2362, VGAM2363 and VGAM2364

[43913] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3225(VGR3225) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43914] VGR3225 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3225 gene was detected is described hereinabove with reference to Figs. 6-15.

[43915] VGR3225 gene encodes VGR3225 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43916] VGR3225 precursor RNA folds spatially, forming VGR3225 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3225 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3225 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[43917] VGR3225 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM2365 precursor RNA, VGAM2366 precursor RNA, VGAM2367 precursor RNA, VGAM2368 precursor RNA, VGAM2369 precursor RNA, VGAM2370 precursor RNA, VGAM2371 precursor RNA and VGAM2372 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRE-

CURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43918] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2365 RNA, VGAM2366 RNA, VGAM2367 RNA, VGAM2368 RNA, VGAM2369 RNA, VGAM2370 RNA, VGAM2371 RNA and VGAM2372 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43919] VGAM2365 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2365 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2365 host target RNA, herein

schematically represented by VGAM1 HOST TARGET RNA into VGAM2365 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43920] VGAM2366 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2366 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2366 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2366 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43921] VGAM2367 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2367 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby in-

hibiting translation of VGAM2367 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2367 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43922] VGAM2368 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2368 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2368 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2368 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43923] VGAM2369 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2369 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2369 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2369 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[43924] VGAM2370 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2370 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2370 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2370 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[43925] VGAM2371 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2371 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2371 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM2371 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[43926] VGAM2372 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM2372 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2372 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM2372 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[43927] It is appreciated that a function of VGR3225 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3225 gene include

diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3225 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3225 gene: VGAM2365 host target protein, VGAM2366 host target protein, VGAM2367 host target protein, VGAM2368 host target protein, VGAM2369 host target protein, VGAM2370 host target protein, VGAM2371 host target protein and VGAM2372 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2365, VGAM2366, VGAM2367, VGAM2368, VGAM2369, VGAM2370, VGAM2371 and VGAM2372

[43928] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3226(VGR3226) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function

and utility of which at least one host target gene is known in the art.

[43929] VGR3226 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3226 gene was detected is described hereinabove with reference to Figs. 6–15.

[43930] VGR3226 gene encodes VGR3226 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43931] VGR3226 precursor RNA folds spatially, forming VGR3226 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3226 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3226 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[43932] VGR3226 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellu–

lar enzymatic activity into at least 7 separate VGAM precursor RNAs, VGAM2373 precursor RNA, VGAM2374 precursor RNA, VGAM2375 precursor RNA, VGAM2376 precursor RNA, VGAM2377 precursor RNA, VGAM2378 precursor RNA and VGAM2379 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR and VGAM7 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43933] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2373 RNA, VGAM2374 RNA, VGAM2375 RNA, VGAM2376 RNA, VGAM2377 RNA, VGAM2378 RNA and VGAM2379 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA and VGAM7 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43934] VGAM2373 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2373 host

target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2373 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2373 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43935] VGAM2374 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2374 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2374 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2374 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43936] VGAM2375 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding

site located in an untranslated region of VGAM2375 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2375 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2375 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43937] VGAM2376 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2376 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2376 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2376 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43938] VGAM2377 RNA, herein schematically represented by

VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2377 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2377 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2377 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[43939] VGAM2378 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2378 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2378 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2378 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[43940] VGAM2379 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2379 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2379 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM2379 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[43941] It is appreciated that a function of VGR3226 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3226 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3226 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3226 gene: VGAM2373 host target protein, VGAM2374 host target protein,

VGAM2375 host target protein, VGAM2376 host target protein, VGAM2377 host target protein, VGAM2378 host target protein and VGAM2379 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2373, VGAM2374, VGAM2375, VGAM2376, VGAM2377, VGAM2378 and VGAM2379

[43942] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3227(VGR3227) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43943] VGR3227 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3227 gene was detected is described hereinabove with reference to Figs. 6-15.

[43944] VGR3227 gene encodes VGR3227 precursor RNA, herein

designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43945] VGR3227 precursor RNA folds spatially, forming VGR3227 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3227 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3227 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[43946] VGR3227 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 7 separate VGAM precursor RNAs, VGAM2380 precursor RNA, VGAM2381 precursor RNA, VGAM2382 precursor RNA, VGAM2383 precursor RNA, VGAM2384 precursor RNA, VGAM2385 precursor RNA and VGAM2386 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR and VGAM7 PRE-

CURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43947] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2380 RNA, VGAM2381 RNA, VGAM2382 RNA, VGAM2383 RNA, VGAM2384 RNA, VGAM2385 RNA and VGAM2386 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA and VGAM7 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43948] VGAM2380 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2380 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2380 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2380 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of

Fig. 1.

[43949] VGAM2381 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2381 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2381 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2381 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43950] VGAM2382 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2382 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2382 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2382 host target protein, herein schematically

represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43951] VGAM2383 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2383 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2383 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2383 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43952] VGAM2384 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2384 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2384 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA

into VGAM2384 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[43953] VGAM2385 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2385 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2385 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2385 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[43954] VGAM2386 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2386 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2386 host target RNA, herein

schematically represented by VGAM7 HOST TARGET RNA into VGAM2386 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[43955] It is appreciated that a function of VGR3227 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3227 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3227 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3227 gene: VGAM2380 host target protein, VGAM2381 host target protein, VGAM2382 host target protein, VGAM2383 host target protein, VGAM2384 host target protein, VGAM2385 host target protein and VGAM2386 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2380, VGAM2381, VGAM2382, VGAM2383, VGAM2384, VGAM2385 and

VGAM2386

[43956] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3228(VGR3228) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43957] VGR3228 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3228 gene was detected is described hereinabove with reference to Figs. 6–15.

[43958] VGR3228 gene encodes VGR3228 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43959] VGR3228 precursor RNA folds spatially, forming VGR3228 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3228 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to

the fact that the nucleotide sequence of VGR3228 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[43960] VGR3228 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate VGAM precursor RNAs, VGAM2387 precursor RNA and VGAM2388 precursor RNA, herein schematically represented by VGAM1 PRECURSOR and VGAM2 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43961] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2387 RNA and VGAM2388 RNA respectively, herein schematically represented by VGAM1 RNA and VGAM2 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43962] VGAM2387 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding

site located in an untranslated region of VGAM2387 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2387 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2387 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43963] VGAM2388 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2388 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2388 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2388 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43964] It is appreciated that a function of VGR3228 gene, herein

designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3228 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3228 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3228 gene: VGAM2387 host target protein and VGAM2388 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN and VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2387 and VGAM2388

[43965] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3229(VGR3229) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43966] VGR3229 gene, herein designated VGR GENE, is a novel

bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3229 gene was detected is described hereinabove with reference to Figs. 6–15.

[43967] VGR3229 gene encodes VGR3229 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43968] VGR3229 precursor RNA folds spatially, forming VGR3229 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3229 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3229 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[43969] VGR3229 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM2389 precursor RNA, VGAM2390 precursor RNA, VGAM2391 precursor RNA, VGAM2392 pre–

cursor RNA, VGAM2393 precursor RNA, VGAM2394 precursor RNA, VGAM2395 precursor RNA and VGAM2396 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43970] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2389 RNA, VGAM2390 RNA, VGAM2391 RNA, VGAM2392 RNA, VGAM2393 RNA, VGAM2394 RNA, VGAM2395 RNA and VGAM2396 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43971] VGAM2389 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2389 host target RNA, herein schematically represented by VGAM1

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2389 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2389 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43972] VGAM2390 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2390 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2390 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2390 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43973] VGAM2391 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2391 host

target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2391 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2391 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43974] VGAM2392 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2392 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2392 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2392 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43975] VGAM2393 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding

site located in an untranslated region of VGAM2393 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2393 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2393 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[43976] VGAM2394 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2394 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2394 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2394 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[43977] VGAM2395 RNA, herein schematically represented by

VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2395 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2395 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM2395 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[43978] VGAM2396 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM2396 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2396 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM2396 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[43979] It is appreciated that a function of VGR3229 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3229 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3229 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3229 gene: VGAM2389 host target protein, VGAM2390 host target protein, VGAM2391 host target protein, VGAM2392 host target protein, VGAM2393 host target protein, VGAM2394 host target protein, VGAM2395 host target protein and VGAM2396 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2389, VGAM2390, VGAM2391, VGAM2392, VGAM2393, VGAM2394, VGAM2395 and VGAM2396

[43980] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred

to here as Viral Genomic Record 3230(VGR3230) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43981] VGR3230 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3230 gene was detected is described hereinabove with reference to Figs. 6–15.

[43982] VGR3230 gene encodes VGR3230 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43983] VGR3230 precursor RNA folds spatially, forming VGR3230 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3230 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3230 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which

is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[43984] VGR3230 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM2397 precursor RNA, VGAM2398 precursor RNA, VGAM2399 precursor RNA, VGAM2400 precursor RNA, VGAM2401 precursor RNA, VGAM2402 precursor RNA, VGAM2403 precursor RNA and VGAM2404 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[43985] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2397 RNA, VGAM2398 RNA, VGAM2399 RNA, VGAM2400 RNA, VGAM2401 RNA, VGAM2402 RNA, VGAM2403 RNA and VGAM2404 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4

RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[43986] VGAM2397 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2397 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2397 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2397 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[43987] VGAM2398 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2398 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2398 host target RNA, herein

schematically represented by VGAM2 HOST TARGET RNA into VGAM2398 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[43988] VGAM2399 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2399 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2399 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2399 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[43989] VGAM2400 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2400 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby in-

hibiting translation of VGAM2400 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2400 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[43990] VGAM2401 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2401 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2401 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2401 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[43991] VGAM2402 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2402 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2402 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2402 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[43992] VGAM2403 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2403 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2403 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM2403 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[43993] VGAM2404 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM2404 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2404 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM2404 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[43994] It is appreciated that a function of VGR3230 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3230 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3230 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3230 gene: VGAM2397 host target protein, VGAM2398 host target protein, VGAM2399 host target protein, VGAM2400 host target protein, VGAM2401 host target protein, VGAM2402 host target protein, VGAM2403 host target protein and VGAM2404 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through

VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2397, VGAM2398, VGAM2399, VGAM2400, VGAM2401, VGAM2402, VGAM2403 and VGAM2404

[43995] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3231(VGR3231) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[43996] VGR3231 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3231 gene was detected is described hereinabove with reference to Figs. 6–15.

[43997] VGR3231 gene encodes VGR3231 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[43998] VGR3231 precursor RNA folds spatially, forming VGR3231 folded precursor RNA, herein designated VGR FOLDED

PRECURSOR RNA. It is appreciated that VGR3231 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3231 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[43999] VGR3231 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM2405 precursor RNA, VGAM2406 precursor RNA, VGAM2407 precursor RNA, VGAM2408 precursor RNA, VGAM2409 precursor RNA, VGAM2410 precursor RNA, VGAM2411 precursor RNA and VGAM2412 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44000] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2405 RNA, VGAM2406 RNA, VGAM2407 RNA, VGAM2408 RNA, VGAM2409 RNA, VGAM2410 RNA, VGAM2411 RNA and VGAM2412 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44001] VGAM2405 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2405 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2405 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2405 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44002] VGAM2406 RNA, herein schematically represented by

VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2406 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2406 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2406 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44003] VGAM2407 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2407 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2407 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2407 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[44004] VGAM2408 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2408 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2408 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2408 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[44005] VGAM2409 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2409 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2409 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2409 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of

Fig. 1.

[44006] VGAM2410 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2410 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2410 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2410 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[44007] VGAM2411 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2411 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2411 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM2411 host target protein, herein schematically

represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[44008] VGAM2412 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM2412 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2412 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM2412 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[44009] It is appreciated that a function of VGR3231 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3231 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3231 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in

the operon-like cluster of VGR3231 gene: VGAM2405 host target protein, VGAM2406 host target protein, VGAM2407 host target protein, VGAM2408 host target protein, VGAM2409 host target protein, VGAM2410 host target protein, VGAM2411 host target protein and VGAM2412 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2405, VGAM2406, VGAM2407, VGAM2408, VGAM2409, VGAM2410, VGAM2411 and VGAM2412

[44010] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3232(VGR3232) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44011] VGR3232 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3232 gene was

detected is described hereinabove with reference to Figs. 6–15.

[44012] VGR3232 gene encodes VGR3232 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44013] VGR3232 precursor RNA folds spatially, forming VGR3232 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3232 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3232 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[44014] VGR3232 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM2413 precursor RNA, VGAM2414 precursor RNA, VGAM2415 precursor RNA, VGAM2416 precursor RNA, VGAM2417 precursor RNA, VGAM2418 precursor RNA, VGAM2419 precursor RNA and VGAM2420

precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44015] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2413 RNA, VGAM2414 RNA, VGAM2415 RNA, VGAM2416 RNA, VGAM2417 RNA, VGAM2418 RNA, VGAM2419 RNA and VGAM2420 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44016] VGAM2413 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2413 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2413 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2413 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44017] VGAM2414 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2414 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2414 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2414 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44018] VGAM2415 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2415 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2415 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2415 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[44019] VGAM2416 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2416 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2416 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2416 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[44020] VGAM2417 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2417 host target RNA, herein schematically represented by VGAM5

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2417 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2417 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[44021] VGAM2418 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2418 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2418 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2418 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[44022] VGAM2419 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2419 host

target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2419 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM2419 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[44023] VGAM2420 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM2420 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2420 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM2420 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[44024] It is appreciated that a function of VGR3232 gene, herein designated VGR GENE, is inhibition of expression of host

target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3232 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3232 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3232 gene: VGAM2413 host target protein, VGAM2414 host target protein, VGAM2415 host target protein, VGAM2416 host target protein, VGAM2417 host target protein, VGAM2418 host target protein, VGAM2419 host target protein and VGAM2420 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2413, VGAM2414, VGAM2415, VGAM2416, VGAM2417, VGAM2418, VGAM2419 and VGAM2420

[44025] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3233(VGR3233) viral gene, which encodes an operon-like cluster of novel viral

micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44026] VGR3233 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3233 gene was detected is described hereinabove with reference to Figs. 6–15.

[44027] VGR3233 gene encodes VGR3233 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44028] VGR3233 precursor RNA folds spatially, forming VGR3233 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3233 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3233 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[44029] VGR3233 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM2421 precursor RNA, VGAM2422 precursor RNA, VGAM2423 precursor RNA, VGAM2424 precursor RNA, VGAM2425 precursor RNA, VGAM2426 precursor RNA, VGAM2427 precursor RNA and VGAM2428 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44030] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2421 RNA, VGAM2422 RNA, VGAM2423 RNA, VGAM2424 RNA, VGAM2425 RNA, VGAM2426 RNA, VGAM2427 RNA and VGAM2428 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs correspond-

ing to VGAM RNA of Fig. 8.

[44031] VGAM2421 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2421 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2421 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2421 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44032] VGAM2422 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2422 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2422 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2422 host target protein, herein schematically

represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44033] VGAM2423 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2423 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2423 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2423 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[44034] VGAM2424 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2424 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2424 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA

into VGAM2424 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[44035] VGAM2425 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2425 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2425 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2425 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[44036] VGAM2426 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2426 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2426 host target RNA, herein

schematically represented by VGAM6 HOST TARGET RNA into VGAM2426 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[44037] VGAM2427 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2427 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2427 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM2427 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[44038] VGAM2428 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM2428 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby in-

hibiting translation of VGAM2428 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM2428 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[44039] It is appreciated that a function of VGR3233 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3233 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3233 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3233 gene: VGAM2421 host target protein, VGAM2422 host target protein, VGAM2423 host target protein, VGAM2424 host target protein, VGAM2425 host target protein, VGAM2426 host target protein, VGAM2427 host target protein and VGAM2428 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with

reference to VGAM2421, VGAM2422, VGAM2423, VGAM2424, VGAM2425, VGAM2426, VGAM2427 and VGAM2428

[44040] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3234(VGR3234) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44041] VGR3234 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3234 gene was detected is described hereinabove with reference to Figs. 6–15.

[44042] VGR3234 gene encodes VGR3234 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44043] VGR3234 precursor RNA folds spatially, forming VGR3234 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3234 folded precursor RNA, herein designated VGR FOLDED PRECUR–

SOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3234 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[44044] VGR3234 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM2429 precursor RNA, VGAM2430 precursor RNA, VGAM2431 precursor RNA, VGAM2432 precursor RNA, VGAM2433 precursor RNA, VGAM2434 precursor RNA, VGAM2435 precursor RNA and VGAM2436 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44045] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA

segments of about 22 nucleotides in length, VGAM2429 RNA, VGAM2430 RNA, VGAM2431 RNA, VGAM2432 RNA, VGAM2433 RNA, VGAM2434 RNA, VGAM2435 RNA and VGAM2436 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44046] VGAM2429 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2429 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2429 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2429 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44047] VGAM2430 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2430 host

target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2430 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2430 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44048] VGAM2431 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2431 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2431 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2431 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[44049] VGAM2432 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding

site located in an untranslated region of VGAM2432 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2432 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2432 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[44050] VGAM2433 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2433 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2433 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2433 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[44051] VGAM2434 RNA, herein schematically represented by

VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2434 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2434 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2434 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[44052] VGAM2435 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2435 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2435 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM2435 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[44053] VGAM2436 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM2436 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2436 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM2436 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[44054] It is appreciated that a function of VGR3234 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3234 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3234 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3234 gene: VGAM2429 host target protein, VGAM2430 host target protein,

VGAM2431 host target protein, VGAM2432 host target protein, VGAM2433 host target protein, VGAM2434 host target protein, VGAM2435 host target protein and VGAM2436 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2429, VGAM2430, VGAM2431, VGAM2432, VGAM2433, VGAM2434, VGAM2435 and VGAM2436

[44055] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3235(VGR3235) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44056] VGR3235 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3235 gene was detected is described hereinabove with reference to Figs. 6-15.

[44057] VGR3235 gene encodes VGR3235 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44058] VGR3235 precursor RNA folds spatially, forming VGR3235 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3235 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3235 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[44059] VGR3235 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 6 separate VGAM precursor RNAs, VGAM2437 precursor RNA, VGAM2438 precursor RNA, VGAM2439 precursor RNA, VGAM2440 precursor RNA, VGAM2441 precursor RNA and VGAM2442 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR and

VGAM6 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44060] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2437 RNA, VGAM2438 RNA, VGAM2439 RNA, VGAM2440 RNA, VGAM2441 RNA and VGAM2442 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA and VGAM6 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44061] VGAM2437 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2437 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2437 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2437 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of

Fig. 1.

[44062] VGAM2438 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2438 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2438 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2438 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44063] VGAM2439 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2439 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2439 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2439 host target protein, herein schematically

represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[44064] VGAM2440 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2440 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2440 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2440 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[44065] VGAM2441 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2441 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2441 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA

into VGAM2441 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[44066] VGAM2442 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2442 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2442 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2442 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[44067] It is appreciated that a function of VGR3235 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3235 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3235 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target

genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3235 gene: VGAM2437 host target protein, VGAM2438 host target protein, VGAM2439 host target protein, VGAM2440 host target protein, VGAM2441 host target protein and VGAM2442 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2437, VGAM2438, VGAM2439, VGAM2440, VGAM2441 and VGAM2442

[44068] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3236(VGR3236) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44069] VGR3236 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3236 gene was detected is described hereinabove with reference to Figs.

6-15.

[44070] VGR3236 gene encodes VGR3236 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44071] VGR3236 precursor RNA folds spatially, forming VGR3236 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3236 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3236 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[44072] VGR3236 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM2443 precursor RNA, VGAM2444 precursor RNA, VGAM2445 precursor RNA, VGAM2446 precursor RNA, VGAM2447 precursor RNA, VGAM2448 precursor RNA, VGAM2449 precursor RNA and VGAM2450 precursor RNA, herein schematically represented by

VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44073] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2443 RNA, VGAM2444 RNA, VGAM2445 RNA, VGAM2446 RNA, VGAM2447 RNA, VGAM2448 RNA, VGAM2449 RNA and VGAM2450 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44074] VGAM2443 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2443 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby in-

hibiting translation of VGAM2443 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2443 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44075] VGAM2444 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2444 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2444 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2444 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44076] VGAM2445 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2445 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2445 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2445 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[44077] VGAM2446 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2446 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2446 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2446 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[44078] VGAM2447 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2447 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2447 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2447 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[44079] VGAM2448 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2448 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2448 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2448 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[44080] VGAM2449 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2449 host target RNA, herein schematically represented by VGAM7

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2449 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM2449 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[44081] VGAM2450 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM2450 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2450 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM2450 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[44082] It is appreciated that a function of VGR3236 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attack–

ing a host. Accordingly, utilities of VGR3236 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3236 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3236 gene: VGAM2443 host target protein, VGAM2444 host target protein, VGAM2445 host target protein, VGAM2446 host target protein, VGAM2447 host target protein, VGAM2448 host target protein, VGAM2449 host target protein and VGAM2450 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2443, VGAM2444, VGAM2445, VGAM2446, VGAM2447, VGAM2448, VGAM2449 and VGAM2450

[44083] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3237(VGR3237) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates

expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44084] VGR3237 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3237 gene was detected is described hereinabove with reference to Figs. 6–15.

[44085] VGR3237 gene encodes VGR3237 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44086] VGR3237 precursor RNA folds spatially, forming VGR3237 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3237 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3237 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[44087] VGR3237 folded precursor RNA, herein designated VGR

FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM2451 precursor RNA, VGAM2452 precursor RNA, VGAM2453 precursor RNA, VGAM2454 precursor RNA, VGAM2455 precursor RNA, VGAM2456 precursor RNA, VGAM2457 precursor RNA and VGAM2458 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44088] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2451 RNA, VGAM2452 RNA, VGAM2453 RNA, VGAM2454 RNA, VGAM2455 RNA, VGAM2456 RNA, VGAM2457 RNA and VGAM2458 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44089] VGAM2451 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2451 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2451 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2451 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44090] VGAM2452 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2452 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2452 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2452 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of

Fig. 1.

[44091] VGAM2453 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2453 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2453 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2453 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[44092] VGAM2454 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2454 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2454 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2454 host target protein, herein schematically

represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[44093] VGAM2455 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2455 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2455 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2455 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[44094] VGAM2456 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2456 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2456 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA

into VGAM2456 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[44095] VGAM2457 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2457 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2457 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM2457 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[44096] VGAM2458 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM2458 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2458 host target RNA, herein

schematically represented by VGAM8 HOST TARGET RNA into VGAM2458 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[44097] It is appreciated that a function of VGR3237 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3237 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3237 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3237 gene: VGAM2451 host target protein, VGAM2452 host target protein, VGAM2453 host target protein, VGAM2454 host target protein, VGAM2455 host target protein, VGAM2456 host target protein, VGAM2457 host target protein and VGAM2458 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2451, VGAM2452, VGAM2453,

VGAM2454, VGAM2455, VGAM2456, VGAM2457 and VGAM2458

[44098] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3238(VGR3238) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44099] VGR3238 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3238 gene was detected is described hereinabove with reference to Figs. 6–15.

[44100] VGR3238 gene encodes VGR3238 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44101] VGR3238 precursor RNA folds spatially, forming VGR3238 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3238 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art

as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3238 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[44102] VGR3238 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM2459 precursor RNA, VGAM2460 precursor RNA, VGAM2461 precursor RNA, VGAM2462 precursor RNA, VGAM2463 precursor RNA, VGAM2464 precursor RNA, VGAM2465 precursor RNA and VGAM2466 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44103] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2459

RNA, VGAM2460 RNA, VGAM2461 RNA, VGAM2462 RNA, VGAM2463 RNA, VGAM2464 RNA, VGAM2465 RNA and VGAM2466 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44104] VGAM2459 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2459 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2459 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2459 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44105] VGAM2460 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2460 host target RNA, herein schematically represented by VGAM2

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2460 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2460 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44106] VGAM2461 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2461 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2461 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2461 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[44107] VGAM2462 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2462 host

target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2462 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2462 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[44108] VGAM2463 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2463 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2463 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2463 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[44109] VGAM2464 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding

site located in an untranslated region of VGAM2464 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2464 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2464 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[44110] VGAM2465 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2465 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2465 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM2465 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[44111] VGAM2466 RNA, herein schematically represented by

VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM2466 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2466 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM2466 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[44112] It is appreciated that a function of VGR3238 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3238 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3238 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3238 gene: VGAM2459 host target protein, VGAM2460 host target protein, VGAM2461 host target protein, VGAM2462 host target

protein, VGAM2463 host target protein, VGAM2464 host target protein, VGAM2465 host target protein and VGAM2466 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2459, VGAM2460, VGAM2461, VGAM2462, VGAM2463, VGAM2464, VGAM2465 and VGAM2466

[44113] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3239(VGR3239) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44114] VGR3239 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3239 gene was detected is described hereinabove with reference to Figs. 6-15.

[44115] VGR3239 gene encodes VGR3239 precursor RNA, herein

designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44116] VGR3239 precursor RNA folds spatially, forming VGR3239 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3239 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3239 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[44117] VGR3239 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM2467 precursor RNA, VGAM2468 precursor RNA, VGAM2469 precursor RNA, VGAM2470 precursor RNA, VGAM2471 precursor RNA, VGAM2472 precursor RNA, VGAM2473 precursor RNA and VGAM2474 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR,

VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44118] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2467 RNA, VGAM2468 RNA, VGAM2469 RNA, VGAM2470 RNA, VGAM2471 RNA, VGAM2472 RNA, VGAM2473 RNA and VGAM2474 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44119] VGAM2467 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2467 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2467 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA

into VGAM2467 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44120] VGAM2468 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2468 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2468 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2468 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44121] VGAM2469 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2469 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2469 host target RNA, herein

schematically represented by VGAM3 HOST TARGET RNA into VGAM2469 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[44122] VGAM2470 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2470 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2470 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2470 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[44123] VGAM2471 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2471 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby in-

hibiting translation of VGAM2471 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2471 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[44124] VGAM2472 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2472 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2472 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2472 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[44125] VGAM2473 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2473 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2473 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM2473 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[44126] VGAM2474 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM2474 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2474 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM2474 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[44127] It is appreciated that a function of VGR3239 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3239 gene include diagnosis, prevention and treatment of viral infection by .

Specific functions, and accordingly utilities, of VGR3239 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3239 gene: VGAM2467 host target protein, VGAM2468 host target protein, VGAM2469 host target protein, VGAM2470 host target protein, VGAM2471 host target protein, VGAM2472 host target protein, VGAM2473 host target protein and VGAM2474 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2467, VGAM2468, VGAM2469, VGAM2470, VGAM2471, VGAM2472, VGAM2473 and VGAM2474

[44128] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3240(VGR3240) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known

in the art.

[44129] VGR3240 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3240 gene was detected is described hereinabove with reference to Figs. 6–15.

[44130] VGR3240 gene encodes VGR3240 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44131] VGR3240 precursor RNA folds spatially, forming VGR3240 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3240 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3240 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[44132] VGR3240 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM pre–

cursor RNAs, VGAM2475 precursor RNA, VGAM2476 precursor RNA, VGAM2477 precursor RNA, VGAM2478 precursor RNA, VGAM2479 precursor RNA, VGAM2480 precursor RNA, VGAM2481 precursor RNA and VGAM2482 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44133] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2475 RNA, VGAM2476 RNA, VGAM2477 RNA, VGAM2478 RNA, VGAM2479 RNA, VGAM2480 RNA, VGAM2481 RNA and VGAM2482 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44134] VGAM2475 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding

site located in an untranslated region of VGAM2475 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2475 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2475 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44135] VGAM2476 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2476 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2476 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2476 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44136] VGAM2477 RNA, herein schematically represented by

VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2477 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2477 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2477 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[44137] VGAM2478 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2478 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2478 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2478 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[44138] VGAM2479 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2479 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2479 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2479 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[44139] VGAM2480 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2480 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2480 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2480 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of

Fig. 1.

[44140] VGAM2481 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2481 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2481 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM2481 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[44141] VGAM2482 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM2482 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2482 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM2482 host target protein, herein schematically

represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[44142] It is appreciated that a function of VGR3240 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3240 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3240 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3240 gene: VGAM2475 host target protein, VGAM2476 host target protein, VGAM2477 host target protein, VGAM2478 host target protein, VGAM2479 host target protein, VGAM2480 host target protein, VGAM2481 host target protein and VGAM2482 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2475, VGAM2476, VGAM2477, VGAM2478, VGAM2479, VGAM2480, VGAM2481 and VGAM2482

[44143] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3241(VGR3241) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44144] VGR3241 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3241 gene was detected is described hereinabove with reference to Figs. 6-15.

[44145] VGR3241 gene encodes VGR3241 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44146] VGR3241 precursor RNA folds spatially, forming VGR3241 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3241 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3241 precursor

sor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[44147] VGR3241 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM2483 precursor RNA, VGAM2484 precursor RNA, VGAM2485 precursor RNA, VGAM2486 precursor RNA, VGAM2487 precursor RNA, VGAM2488 precursor RNA, VGAM2489 precursor RNA and VGAM2490 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44148] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2483 RNA, VGAM2484 RNA, VGAM2485 RNA, VGAM2486 RNA, VGAM2487 RNA, VGAM2488 RNA, VGAM2489 RNA and

VGAM2490 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44149] VGAM2483 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2483 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2483 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2483 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44150] VGAM2484 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2484 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2484 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2484 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44151] VGAM2485 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2485 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2485 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2485 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[44152] VGAM2486 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2486 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2486 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2486 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[44153] VGAM2487 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2487 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2487 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2487 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[44154] VGAM2488 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2488 host target RNA, herein schematically represented by VGAM6

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2488 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2488 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[44155] VGAM2489 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2489 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2489 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM2489 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[44156] VGAM2490 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM2490 host

target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2490 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM2490 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[44157] It is appreciated that a function of VGR3241 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3241 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3241 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3241 gene: VGAM2483 host target protein, VGAM2484 host target protein, VGAM2485 host target protein, VGAM2486 host target protein, VGAM2487 host target protein, VGAM2488 host target protein, VGAM2489 host target protein and

VGAM2490 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2483, VGAM2484, VGAM2485, VGAM2486, VGAM2487, VGAM2488, VGAM2489 and VGAM2490

[44158] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3242(VGR3242) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44159] VGR3242 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3242 gene was detected is described hereinabove with reference to Figs. 6-15.

[44160] VGR3242 gene encodes VGR3242 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44161] VGR3242 precursor RNA folds spatially, forming VGR3242 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3242 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3242 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[44162] VGR3242 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM2491 precursor RNA, VGAM2492 precursor RNA, VGAM2493 precursor RNA, VGAM2494 precursor RNA, VGAM2495 precursor RNA, VGAM2496 precursor RNA, VGAM2497 precursor RNA and VGAM2498 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs

being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44163] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2491 RNA, VGAM2492 RNA, VGAM2493 RNA, VGAM2494 RNA, VGAM2495 RNA, VGAM2496 RNA, VGAM2497 RNA and VGAM2498 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44164] VGAM2491 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2491 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2491 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2491 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of

Fig. 1.

[44165] VGAM2492 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2492 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2492 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2492 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44166] VGAM2493 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2493 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2493 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2493 host target protein, herein schematically

represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[44167] VGAM2494 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2494 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2494 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2494 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[44168] VGAM2495 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2495 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2495 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA

into VGAM2495 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[44169] VGAM2496 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2496 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2496 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2496 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[44170] VGAM2497 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2497 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2497 host target RNA, herein

schematically represented by VGAM7 HOST TARGET RNA into VGAM2497 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[44171] VGAM2498 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM2498 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2498 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM2498 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[44172] It is appreciated that a function of VGR3242 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3242 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3242 gene, herein designated VGR GENE, correlate with, and

may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3242 gene: VGAM2491 host target protein, VGAM2492 host target protein, VGAM2493 host target protein, VGAM2494 host target protein, VGAM2495 host target protein, VGAM2496 host target protein, VGAM2497 host target protein and VGAM2498 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2491, VGAM2492, VGAM2493, VGAM2494, VGAM2495, VGAM2496, VGAM2497 and VGAM2498

[44173] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3243(VGR3243) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44174] VGR3243 gene, herein designated VGR GENE, is a novel

bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3243 gene was detected is described hereinabove with reference to Figs. 6–15.

[44175] VGR3243 gene encodes VGR3243 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44176] VGR3243 precursor RNA folds spatially, forming VGR3243 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3243 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3243 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[44177] VGR3243 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM2499 precursor RNA, VGAM2500 precursor RNA, VGAM2501 precursor RNA, VGAM2502 pre–

cursor RNA, VGAM2503 precursor RNA, VGAM2504 precursor RNA, VGAM2505 precursor RNA and VGAM2506 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44178] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2499 RNA, VGAM2500 RNA, VGAM2501 RNA, VGAM2502 RNA, VGAM2503 RNA, VGAM2504 RNA, VGAM2505 RNA and VGAM2506 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44179] VGAM2499 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2499 host target RNA, herein schematically represented by VGAM1

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2499 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2499 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44180] VGAM2500 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2500 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2500 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2500 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44181] VGAM2501 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2501 host

target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2501 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2501 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[44182] VGAM2502 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2502 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2502 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2502 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[44183] VGAM2503 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding

site located in an untranslated region of VGAM2503 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2503 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2503 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[44184] VGAM2504 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2504 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2504 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2504 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[44185] VGAM2505 RNA, herein schematically represented by

VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2505 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2505 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM2505 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[44186] VGAM2506 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM2506 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2506 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM2506 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[44187] It is appreciated that a function of VGR3243 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3243 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3243 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3243 gene: VGAM2499 host target protein, VGAM2500 host target protein, VGAM2501 host target protein, VGAM2502 host target protein, VGAM2503 host target protein, VGAM2504 host target protein, VGAM2505 host target protein and VGAM2506 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2499, VGAM2500, VGAM2501, VGAM2502, VGAM2503, VGAM2504, VGAM2505 and VGAM2506

[44188] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred

to here as Viral Genomic Record 3244(VGR3244) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44189] VGR3244 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3244 gene was detected is described hereinabove with reference to Figs. 6–15.

[44190] VGR3244 gene encodes VGR3244 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44191] VGR3244 precursor RNA folds spatially, forming VGR3244 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3244 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3244 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which

is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[44192] VGR3244 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM2507 precursor RNA, VGAM2508 precursor RNA, VGAM2509 precursor RNA, VGAM2510 precursor RNA, VGAM2511 precursor RNA, VGAM2512 precursor RNA, VGAM2513 precursor RNA and VGAM2514 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44193] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2507 RNA, VGAM2508 RNA, VGAM2509 RNA, VGAM2510 RNA, VGAM2511 RNA, VGAM2512 RNA, VGAM2513 RNA and VGAM2514 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4

RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44194] VGAM2507 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2507 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2507 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2507 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44195] VGAM2508 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2508 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2508 host target RNA, herein

schematically represented by VGAM2 HOST TARGET RNA into VGAM2508 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44196] VGAM2509 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2509 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2509 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2509 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[44197] VGAM2510 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2510 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby in-

hibiting translation of VGAM2510 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2510 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[44198] VGAM2511 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2511 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2511 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2511 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[44199] VGAM2512 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2512 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2512 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2512 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[44200] VGAM2513 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2513 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2513 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM2513 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[44201] VGAM2514 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM2514 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2514 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM2514 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[44202] It is appreciated that a function of VGR3244 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3244 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3244 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3244 gene: VGAM2507 host target protein, VGAM2508 host target protein, VGAM2509 host target protein, VGAM2510 host target protein, VGAM2511 host target protein, VGAM2512 host target protein, VGAM2513 host target protein and VGAM2514 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through

VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2507, VGAM2508, VGAM2509, VGAM2510, VGAM2511, VGAM2512, VGAM2513 and VGAM2514

[44203] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3245(VGR3245) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44204] VGR3245 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3245 gene was detected is described hereinabove with reference to Figs. 6–15.

[44205] VGR3245 gene encodes VGR3245 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44206] VGR3245 precursor RNA folds spatially, forming VGR3245 folded precursor RNA, herein designated VGR FOLDED

PRECURSOR RNA. It is appreciated that VGR3245 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3245 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[44207] VGR3245 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM2515 precursor RNA, VGAM2516 precursor RNA, VGAM2517 precursor RNA, VGAM2518 precursor RNA, VGAM2519 precursor RNA, VGAM2520 precursor RNA, VGAM2521 precursor RNA and VGAM2522 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44208] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2515 RNA, VGAM2516 RNA, VGAM2517 RNA, VGAM2518 RNA, VGAM2519 RNA, VGAM2520 RNA, VGAM2521 RNA and VGAM2522 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44209] VGAM2515 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2515 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2515 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2515 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44210] VGAM2516 RNA, herein schematically represented by

VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2516 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2516 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2516 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44211] VGAM2517 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2517 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2517 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2517 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[44212] VGAM2518 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2518 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2518 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2518 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[44213] VGAM2519 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2519 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2519 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2519 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of

Fig. 1.

[44214] VGAM2520 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2520 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2520 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2520 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[44215] VGAM2521 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2521 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2521 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM2521 host target protein, herein schematically

represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[44216] VGAM2522 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM2522 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2522 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM2522 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[44217] It is appreciated that a function of VGR3245 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3245 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3245 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in

the operon-like cluster of VGR3245 gene: VGAM2515 host target protein, VGAM2516 host target protein, VGAM2517 host target protein, VGAM2518 host target protein, VGAM2519 host target protein, VGAM2520 host target protein, VGAM2521 host target protein and VGAM2522 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2515, VGAM2516, VGAM2517, VGAM2518, VGAM2519, VGAM2520, VGAM2521 and VGAM2522

[44218] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3246(VGR3246) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44219] VGR3246 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3246 gene was

detected is described hereinabove with reference to Figs. 6–15.

[44220] VGR3246 gene encodes VGR3246 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44221] VGR3246 precursor RNA folds spatially, forming VGR3246 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3246 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3246 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[44222] VGR3246 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 5 separate VGAM precursor RNAs, VGAM2523 precursor RNA, VGAM2524 precursor RNA, VGAM2525 precursor RNA, VGAM2526 precursor RNA and VGAM2527 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2

PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR and VGAM5 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44223] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2523 RNA, VGAM2524 RNA, VGAM2525 RNA, VGAM2526 RNA and VGAM2527 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA and VGAM5 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44224] VGAM2523 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2523 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2523 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2523 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of

Fig. 1.

[44225] VGAM2524 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2524 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2524 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2524 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44226] VGAM2525 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2525 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2525 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2525 host target protein, herein schematically

represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[44227] VGAM2526 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2526 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2526 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2526 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[44228] VGAM2527 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2527 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2527 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA

into VGAM2527 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[44229] It is appreciated that a function of VGR3246 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3246 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3246 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3246 gene: VGAM2523 host target protein, VGAM2524 host target protein, VGAM2525 host target protein, VGAM2526 host target protein and VGAM2527 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2523, VGAM2524, VGAM2525, VGAM2526 and VGAM2527

[44230] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred

to here as Viral Genomic Record 3247(VGR3247) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44231] VGR3247 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3247 gene was detected is described hereinabove with reference to Figs. 6–15.

[44232] VGR3247 gene encodes VGR3247 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44233] VGR3247 precursor RNA folds spatially, forming VGR3247 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3247 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3247 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which

is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[44234] VGR3247 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate VGAM precursor RNAs, VGAM2530 precursor RNA and VGAM2531 precursor RNA, herein schematically represented by VGAM1 PRECURSOR and VGAM2 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44235] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2530 RNA and VGAM2531 RNA respectively, herein schematically represented by VGAM1 RNA and VGAM2 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44236] VGAM2530 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2530 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2530 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2530 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44237] VGAM2531 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2531 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2531 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2531 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44238] It is appreciated that a function of VGR3247 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3247 gene include

diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3247 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3247 gene: VGAM2530 host target protein and VGAM2531 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN and VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2530 and VGAM2531

[44239] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3248(VGR3248) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44240] VGR3248 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3248 gene was detected is described hereinabove with reference to Figs.

6-15.

[44241] VGR3248 gene encodes VGR3248 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44242] VGR3248 precursor RNA folds spatially, forming VGR3248 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3248 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3248 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[44243] VGR3248 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate VGAM precursor RNAs, VGAM2532 precursor RNA, VGAM2533 precursor RNA, VGAM2534 precursor RNA and VGAM2535 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR and VGAM4 PRECURSOR respectively, each of

which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44244] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2532 RNA, VGAM2533 RNA, VGAM2534 RNA and VGAM2535 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA and VGAM4 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44245] VGAM2532 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2532 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2532 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2532 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44246] VGAM2533 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2533 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2533 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2533 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44247] VGAM2534 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2534 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2534 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2534 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of

Fig. 1.

[44248] VGAM2535 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2535 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2535 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2535 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[44249] It is appreciated that a function of VGR3248 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3248 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3248 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3248 gene: VGAM2532

host target protein, VGAM2533 host target protein, VGAM2534 host target protein and VGAM2535 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2532, VGAM2533, VGAM2534 and VGAM2535

[44250] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3249(VGR3249) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44251] VGR3249 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3249 gene was detected is described hereinabove with reference to Figs. 6-15.

[44252] VGR3249 gene encodes VGR3249 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44253] VGR3249 precursor RNA folds spatially, forming VGR3249 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3249 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3249 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[44254] VGR3249 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate VGAM precursor RNAs, VGAM2536 precursor RNA, VGAM2537 precursor RNA and VGAM2538 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR and VGAM3 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44255] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA

segments of about 22 nucleotides in length, VGAM2536 RNA, VGAM2537 RNA and VGAM2538 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA and VGAM3 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44256] VGAM2536 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2536 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2536 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2536 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44257] VGAM2537 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2537 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2537 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2537 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44258] VGAM2538 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2538 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2538 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2538 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[44259] It is appreciated that a function of VGR3249 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3249 gene include diagnosis, prevention and treatment of viral infection by .

Specific functions, and accordingly utilities, of VGR3249 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3249 gene: VGAM2536 host target protein, VGAM2537 host target protein and VGAM2538 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2536, VGAM2537 and VGAM2538

[44260] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3250(VGR3250) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44261] VGR3250 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3250 gene was detected is described hereinabove with reference to Figs.

6-15.

[44262] VGR3250 gene encodes VGR3250 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44263] VGR3250 precursor RNA folds spatially, forming VGR3250 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3250 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3250 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[44264] VGR3250 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate VGAM precursor RNAs, VGAM2539 precursor RNA and VGAM2540 precursor RNA, herein schematically represented by VGAM1 PRECURSOR and VGAM2 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECUR-

SOR RNA of Fig. 8.

[44265] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2539 RNA and VGAM2540 RNA respectively, herein schematically represented by VGAM1 RNA and VGAM2 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44266] VGAM2539 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2539 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2539 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2539 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44267] VGAM2540 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2540 host

target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2540 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2540 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44268] It is appreciated that a function of VGR3250 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3250 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3250 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3250 gene: VGAM2539 host target protein and VGAM2540 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN and VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated

hereinabove with reference to VGAM2539 and VGAM2540

[44269] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3251(VGR3251) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44270] VGR3251 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3251 gene was detected is described hereinabove with reference to Figs. 6–15.

[44271] VGR3251 gene encodes VGR3251 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44272] VGR3251 precursor RNA folds spatially, forming VGR3251 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3251 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to

the fact that the nucleotide sequence of VGR3251 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[44273] VGR3251 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 7 separate VGAM precursor RNAs, VGAM2541 precursor RNA, VGAM2542 precursor RNA, VGAM2543 precursor RNA, VGAM2544 precursor RNA, VGAM2545 precursor RNA, VGAM2546 precursor RNA and VGAM2547 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR and VGAM7 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44274] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2541 RNA, VGAM2542 RNA, VGAM2543 RNA, VGAM2544 RNA, VGAM2545 RNA, VGAM2546 RNA and VGAM2547 RNA re-

spectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA and VGAM7 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44275] VGAM2541 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2541 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2541 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2541 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44276] VGAM2542 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2542 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby in-

hibiting translation of VGAM2542 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2542 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44277] VGAM2543 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2543 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2543 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2543 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[44278] VGAM2544 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2544 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2544 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2544 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[44279] VGAM2545 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2545 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2545 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2545 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[44280] VGAM2546 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2546 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2546 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2546 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[44281] VGAM2547 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2547 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2547 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM2547 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[44282] It is appreciated that a function of VGR3251 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3251 gene include

diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3251 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3251 gene: VGAM2541 host target protein, VGAM2542 host target protein, VGAM2543 host target protein, VGAM2544 host target protein, VGAM2545 host target protein, VGAM2546 host target protein and VGAM2547 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2541, VGAM2542, VGAM2543, VGAM2544, VGAM2545, VGAM2546 and VGAM2547

[44283] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3252(VGR3252) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known

in the art.

[44284] VGR3252 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3252 gene was detected is described hereinabove with reference to Figs. 6–15.

[44285] VGR3252 gene encodes VGR3252 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44286] VGR3252 precursor RNA folds spatially, forming VGR3252 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3252 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3252 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[44287] VGR3252 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate VGAM pre–

cursor RNAs, VGAM2548 precursor RNA, VGAM2549 precursor RNA and VGAM2550 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR and VGAM3 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44288] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2548 RNA, VGAM2549 RNA and VGAM2550 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA and VGAM3 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44289] VGAM2548 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2548 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2548 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA

into VGAM2548 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44290] VGAM2549 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2549 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2549 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2549 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44291] VGAM2550 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2550 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2550 host target RNA, herein

schematically represented by VGAM3 HOST TARGET RNA into VGAM2550 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[44292] It is appreciated that a function of VGR3252 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3252 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3252 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3252 gene: VGAM2548 host target protein, VGAM2549 host target protein and VGAM2550 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2548, VGAM2549 and VGAM2550

[44293] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3253(VGR3253) viral

gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44294] VGR3253 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3253 gene was detected is described hereinabove with reference to Figs. 6–15.

[44295] VGR3253 gene encodes VGR3253 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44296] VGR3253 precursor RNA folds spatially, forming VGR3253 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3253 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3253 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the

second half thereof, as is well known in the art.

[44297] VGR3253 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate VGAM precursor RNAs, VGAM2552 precursor RNA and VGAM2553 precursor RNA, herein schematically represented by VGAM1 PRECURSOR and VGAM2 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44298] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2552 RNA and VGAM2553 RNA respectively, herein schematically represented by VGAM1 RNA and VGAM2 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44299] VGAM2552 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2552 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2552 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2552 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44300] VGAM2553 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2553 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2553 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2553 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44301] It is appreciated that a function of VGR3253 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3253 gene include diagnosis, prevention and treatment of viral infection by .

Specific functions, and accordingly utilities, of VGR3253 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3253 gene: VGAM2552 host target protein and VGAM2553 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN and VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2552 and VGAM2553

[44302] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3254(VGR3254) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44303] VGR3254 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3254 gene was detected is described hereinabove with reference to Figs. 6–15.

[44304] VGR3254 gene encodes VGR3254 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44305] VGR3254 precursor RNA folds spatially, forming VGR3254 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3254 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3254 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[44306] VGR3254 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate VGAM precursor RNAs, VGAM2554 precursor RNA, VGAM2555 precursor RNA and VGAM2556 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR and VGAM3 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig.

8.

[44307] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2554 RNA, VGAM2555 RNA and VGAM2556 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA and VGAM3 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44308] VGAM2554 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2554 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2554 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2554 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44309] VGAM2555 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2555 host

target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2555 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2555 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44310] VGAM2556 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2556 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2556 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2556 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[44311] It is appreciated that a function of VGR3254 gene, herein designated VGR GENE, is inhibition of expression of host

target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3254 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3254 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3254 gene: VGAM2554 host target protein, VGAM2555 host target protein and VGAM2556 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2554, VGAM2555 and VGAM2556

[44312] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3255(VGR3255) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44313] VGR3255 gene, herein designated VGR GENE, is a novel

bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3255 gene was detected is described hereinabove with reference to Figs. 6–15.

[44314] VGR3255 gene encodes VGR3255 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44315] VGR3255 precursor RNA folds spatially, forming VGR3255 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3255 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3255 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[44316] VGR3255 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 7 separate VGAM precursor RNAs, VGAM2557 precursor RNA, VGAM2558 precursor RNA, VGAM2559 precursor RNA, VGAM2560 pre–

cursor RNA, VGAM2561 precursor RNA, VGAM2562 precursor RNA and VGAM2563 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR and VGAM7 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44317] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2557 RNA, VGAM2558 RNA, VGAM2559 RNA, VGAM2560 RNA, VGAM2561 RNA, VGAM2562 RNA and VGAM2563 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA and VGAM7 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44318] VGAM2557 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2557 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2557 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2557 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44319] VGAM2558 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2558 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2558 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2558 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44320] VGAM2559 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2559 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2559 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2559 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[44321] VGAM2560 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2560 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2560 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2560 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[44322] VGAM2561 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2561 host target RNA, herein schematically represented by VGAM5

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2561 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2561 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[44323] VGAM2562 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2562 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2562 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2562 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[44324] VGAM2563 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2563 host

target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2563 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM2563 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[44325] It is appreciated that a function of VGR3255 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3255 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3255 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3255 gene: VGAM2557 host target protein, VGAM2558 host target protein, VGAM2559 host target protein, VGAM2560 host target protein, VGAM2561 host target protein, VGAM2562 host target protein and VGAM2563 host target protein, herein

schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2557, VGAM2558, VGAM2559, VGAM2560, VGAM2561, VGAM2562 and VGAM2563

[44326] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3256(VGR3256) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44327] VGR3256 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3256 gene was detected is described hereinabove with reference to Figs. 6-15.

[44328] VGR3256 gene encodes VGR3256 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44329] VGR3256 precursor RNA folds spatially, forming VGR3256

folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3256 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3256 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[44330] VGR3256 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM2564 precursor RNA, VGAM2565 precursor RNA, VGAM2566 precursor RNA, VGAM2567 precursor RNA, VGAM2568 precursor RNA, VGAM2569 precursor RNA, VGAM2570 precursor RNA and VGAM2571 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to

VGAM PRECURSOR RNA of Fig. 8.

[44331] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2564 RNA, VGAM2565 RNA, VGAM2566 RNA, VGAM2567 RNA, VGAM2568 RNA, VGAM2569 RNA, VGAM2570 RNA and VGAM2571 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44332] VGAM2564 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2564 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2564 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2564 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44333] VGAM2565 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2565 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2565 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2565 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44334] VGAM2566 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2566 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2566 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2566 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of

Fig. 1.

[44335] VGAM2567 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2567 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2567 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2567 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[44336] VGAM2568 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2568 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2568 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2568 host target protein, herein schematically

represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[44337] VGAM2569 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2569 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2569 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2569 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[44338] VGAM2570 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2570 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2570 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA

into VGAM2570 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[44339] VGAM2571 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM2571 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2571 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM2571 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[44340] It is appreciated that a function of VGR3256 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3256 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3256 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target

genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3256 gene: VGAM2564 host target protein, VGAM2565 host target protein, VGAM2566 host target protein, VGAM2567 host target protein, VGAM2568 host target protein, VGAM2569 host target protein, VGAM2570 host target protein and VGAM2571 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2564, VGAM2565, VGAM2566, VGAM2567, VGAM2568, VGAM2569, VGAM2570 and VGAM2571

[44341] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3257(VGR3257) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44342] VGR3257 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding,

RNA viral gene. The method by which VGR3257 gene was detected is described hereinabove with reference to Figs. 6–15.

[44343] VGR3257 gene encodes VGR3257 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44344] VGR3257 precursor RNA folds spatially, forming VGR3257 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3257 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3257 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[44345] VGR3257 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 7 separate VGAM precursor RNAs, VGAM2572 precursor RNA, VGAM2573 precursor RNA, VGAM2574 precursor RNA, VGAM2575 precursor RNA, VGAM2576 precursor RNA, VGAM2577 pre–

cursor RNA and VGAM2578 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR and VGAM7 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44346] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2572 RNA, VGAM2573 RNA, VGAM2574 RNA, VGAM2575 RNA, VGAM2576 RNA, VGAM2577 RNA and VGAM2578 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA and VGAM7 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44347] VGAM2572 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2572 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby in-

hibiting translation of VGAM2572 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2572 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44348] VGAM2573 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2573 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2573 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2573 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44349] VGAM2574 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2574 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2574 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2574 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[44350] VGAM2575 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2575 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2575 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2575 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[44351] VGAM2576 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2576 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2576 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2576 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[44352] VGAM2577 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2577 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2577 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2577 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[44353] VGAM2578 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2578 host target RNA, herein schematically represented by VGAM7

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2578 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM2578 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[44354] It is appreciated that a function of VGR3257 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3257 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3257 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3257 gene: VGAM2572 host target protein, VGAM2573 host target protein, VGAM2574 host target protein, VGAM2575 host target protein, VGAM2576 host target protein, VGAM2577 host target protein and VGAM2578 host target protein, herein schematically represented by VGAM1 HOST TARGET PRO-

TEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2572, VGAM2573, VGAM2574, VGAM2575, VGAM2576, VGAM2577 and VGAM2578

[44355] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3258(VGR3258) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44356] VGR3258 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3258 gene was detected is described hereinabove with reference to Figs. 6–15.

[44357] VGR3258 gene encodes VGR3258 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44358] VGR3258 precursor RNA folds spatially, forming VGR3258 folded precursor RNA, herein designated VGR FOLDED

PRECURSOR RNA. It is appreciated that VGR3258 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3258 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[44359] VGR3258 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 5 separate VGAM precursor RNAs, VGAM2579 precursor RNA, VGAM2580 precursor RNA, VGAM2581 precursor RNA, VGAM2582 precursor RNA and VGAM2583 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR and VGAM5 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44360] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2579

RNA, VGAM2580 RNA, VGAM2581 RNA, VGAM2582 RNA and VGAM2583 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA and VGAM5 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44361] VGAM2579 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2579 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2579 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2579 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44362] VGAM2580 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2580 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2580 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2580 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44363] VGAM2581 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2581 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2581 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2581 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[44364] VGAM2582 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2582 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2582 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2582 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[44365] VGAM2583 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2583 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2583 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2583 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[44366] It is appreciated that a function of VGR3258 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3258 gene include

diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3258 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3258 gene: VGAM2579 host target protein, VGAM2580 host target protein, VGAM2581 host target protein, VGAM2582 host target protein and VGAM2583 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2579, VGAM2580, VGAM2581, VGAM2582 and VGAM2583

[44367] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3259(VGR3259) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44368] VGR3259 gene, herein designated VGR GENE, is a novel

bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3259 gene was detected is described hereinabove with reference to Figs. 6–15.

[44369] VGR3259 gene encodes VGR3259 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44370] VGR3259 precursor RNA folds spatially, forming VGR3259 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3259 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3259 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[44371] VGR3259 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 5 separate VGAM precursor RNAs, VGAM2584 precursor RNA, VGAM2585 precursor RNA, VGAM2586 precursor RNA, VGAM2587 pre–

cursor RNA and VGAM2588 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR and VGAM5 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44372] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2584 RNA, VGAM2585 RNA, VGAM2586 RNA, VGAM2587 RNA and VGAM2588 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA and VGAM5 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44373] VGAM2584 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2584 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2584 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA

into VGAM2584 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44374] VGAM2585 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2585 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2585 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2585 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44375] VGAM2586 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2586 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2586 host target RNA, herein

schematically represented by VGAM3 HOST TARGET RNA into VGAM2586 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[44376] VGAM2587 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2587 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2587 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2587 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[44377] VGAM2588 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2588 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby in-

hibiting translation of VGAM2588 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2588 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[44378] It is appreciated that a function of VGR3259 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3259 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3259 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3259 gene: VGAM2584 host target protein, VGAM2585 host target protein, VGAM2586 host target protein, VGAM2587 host target protein and VGAM2588 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2584, VGAM2585, VGAM2586, VGAM2587 and VGAM2588

[44379] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3260(VGR3260) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44380] VGR3260 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3260 gene was detected is described hereinabove with reference to Figs. 6–15.

[44381] VGR3260 gene encodes VGR3260 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44382] VGR3260 precursor RNA folds spatially, forming VGR3260 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3260 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3260 precursor

sor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[44383] VGR3260 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 7 separate VGAM precursor RNAs, VGAM2589 precursor RNA, VGAM2590 precursor RNA, VGAM2591 precursor RNA, VGAM2592 precursor RNA, VGAM2593 precursor RNA, VGAM2594 precursor RNA and VGAM2595 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR and VGAM7 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44384] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2589 RNA, VGAM2590 RNA, VGAM2591 RNA, VGAM2592 RNA, VGAM2593 RNA, VGAM2594 RNA and VGAM2595 RNA respectively, herein schematically represented by VGAM1

RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA and VGAM7 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44385] VGAM2589 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2589 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2589 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2589 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44386] VGAM2590 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2590 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2590 host target RNA, herein

schematically represented by VGAM2 HOST TARGET RNA into VGAM2590 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44387] VGAM2591 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2591 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2591 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2591 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[44388] VGAM2592 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2592 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby in-

hibiting translation of VGAM2592 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2592 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[44389] VGAM2593 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2593 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2593 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2593 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[44390] VGAM2594 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2594 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2594 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2594 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[44391] VGAM2595 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2595 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2595 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM2595 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[44392] It is appreciated that a function of VGR3260 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3260 gene include diagnosis, prevention and treatment of viral infection by .

Specific functions, and accordingly utilities, of VGR3260 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3260 gene: VGAM2589 host target protein, VGAM2590 host target protein, VGAM2591 host target protein, VGAM2592 host target protein, VGAM2593 host target protein, VGAM2594 host target protein and VGAM2595 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2589, VGAM2590, VGAM2591, VGAM2592, VGAM2593, VGAM2594 and VGAM2595

[44393] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3261(VGR3261) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44394] VGR3261 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3261 gene was detected is described hereinabove with reference to Figs. 6–15.

[44395] VGR3261 gene encodes VGR3261 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44396] VGR3261 precursor RNA folds spatially, forming VGR3261 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3261 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3261 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[44397] VGR3261 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate VGAM precursor RNAs, VGAM2596 precursor RNA, VGAM2597 pre–

cursor RNA and VGAM2598 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR and VGAM3 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44398] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2596 RNA, VGAM2597 RNA and VGAM2598 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA and VGAM3 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44399] VGAM2596 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2596 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2596 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2596 host target protein, herein schematically

represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44400] VGAM2597 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2597 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2597 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2597 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44401] VGAM2598 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2598 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2598 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA

into VGAM2598 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[44402] It is appreciated that a function of VGR3261 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3261 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3261 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3261 gene: VGAM2596 host target protein, VGAM2597 host target protein and VGAM2598 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2596, VGAM2597 and VGAM2598

[44403] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3262(VGR3262) viral gene, which encodes an operon-like cluster of novel viral

micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44404] VGR3262 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3262 gene was detected is described hereinabove with reference to Figs. 6–15.

[44405] VGR3262 gene encodes VGR3262 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44406] VGR3262 precursor RNA folds spatially, forming VGR3262 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3262 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3262 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[44407] VGR3262 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate VGAM precursor RNAs, VGAM2599 precursor RNA, VGAM2600 precursor RNA, VGAM2601 precursor RNA and VGAM2602 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR and VGAM4 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44408] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2599 RNA, VGAM2600 RNA, VGAM2601 RNA and VGAM2602 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA and VGAM4 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44409] VGAM2599 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2599 host target RNA, herein schematically represented by VGAM1

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2599 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2599 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44410] VGAM2600 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2600 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2600 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2600 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44411] VGAM2601 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2601 host

target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2601 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2601 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[44412] VGAM2602 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2602 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2602 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2602 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[44413] It is appreciated that a function of VGR3262 gene, herein designated VGR GENE, is inhibition of expression of host

target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3262 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3262 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3262 gene: VGAM2599 host target protein, VGAM2600 host target protein, VGAM2601 host target protein and VGAM2602 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2599, VGAM2600, VGAM2601 and VGAM2602

[44414] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3263(VGR3263) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44415] VGR3263 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3263 gene was detected is described hereinabove with reference to Figs. 6–15.

[44416] VGR3263 gene encodes VGR3263 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44417] VGR3263 precursor RNA folds spatially, forming VGR3263 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3263 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3263 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[44418] VGR3263 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate VGAM precursor RNAs, VGAM2603 precursor RNA and VGAM2604

precursor RNA, herein schematically represented by VGAM1 PRECURSOR and VGAM2 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44419] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2603 RNA and VGAM2604 RNA respectively, herein schematically represented by VGAM1 RNA and VGAM2 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44420] VGAM2603 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2603 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2603 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2603 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of

Fig. 1.

[44421] VGAM2604 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2604 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2604 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2604 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44422] It is appreciated that a function of VGR3263 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3263 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3263 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3263 gene: VGAM2603

host target protein and VGAM2604 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN and VGAM HOST TARGET PROTEIN respectively.

The function of these host target genes is elaborated hereinabove with reference to VGAM2603 and VGAM2604

[44423] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3264(VGR3264) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44424] VGR3264 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3264 gene was detected is described hereinabove with reference to Figs. 6–15.

[44425] VGR3264 gene encodes VGR3264 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44426] VGR3264 precursor RNA folds spatially, forming VGR3264 folded precursor RNA, herein designated VGR FOLDED

PRECURSOR RNA. It is appreciated that VGR3264 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3264 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[44427] VGR3264 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate VGAM precursor RNAs, VGAM2605 precursor RNA and VGAM2606 precursor RNA, herein schematically represented by VGAM1 PRECURSOR and VGAM2 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44428] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2605 RNA and VGAM2606 RNA respectively, herein schematically represented by VGAM1 RNA and VGAM2 RNA respec-

tively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44429] VGAM2605 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2605 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2605 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2605 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44430] VGAM2606 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2606 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2606 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA

into VGAM2606 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

- [44431] It is appreciated that a function of VGR3264 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3264 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3264 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3264 gene: VGAM2605 host target protein and VGAM2606 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN and VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2605 and VGAM2606
- [44432] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3265(VGR3265) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates

expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44433] VGR3265 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3265 gene was detected is described hereinabove with reference to Figs. 6–15.

[44434] VGR3265 gene encodes VGR3265 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44435] VGR3265 precursor RNA folds spatially, forming VGR3265 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3265 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3265 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[44436] VGR3265 folded precursor RNA, herein designated VGR

FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate VGAM precursor RNAs, VGAM2607 precursor RNA, VGAM2608 precursor RNA, VGAM2609 precursor RNA and VGAM2610 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR and VGAM4 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44437] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2607 RNA, VGAM2608 RNA, VGAM2609 RNA and VGAM2610 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA and VGAM4 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44438] VGAM2607 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2607 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2607 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2607 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44439] VGAM2608 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2608 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2608 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2608 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44440] VGAM2609 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2609 host target RNA, herein schematically represented by VGAM3

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2609 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2609 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[44441] VGAM2610 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2610 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2610 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2610 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[44442] It is appreciated that a function of VGR3265 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attack–

ing a host. Accordingly, utilities of VGR3265 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3265 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3265 gene: VGAM2607 host target protein, VGAM2608 host target protein, VGAM2609 host target protein and VGAM2610 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2607, VGAM2608, VGAM2609 and VGAM2610

[44443] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3266(VGR3266) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44444] VGR3266 gene, herein designated VGR GENE, is a novel

bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3266 gene was detected is described hereinabove with reference to Figs. 6–15.

[44445] VGR3266 gene encodes VGR3266 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44446] VGR3266 precursor RNA folds spatially, forming VGR3266 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3266 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3266 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[44447] VGR3266 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate VGAM precursor RNAs, VGAM2611 precursor RNA and VGAM2612 precursor RNA, herein schematically represented by

VGAM1 PRECURSOR and VGAM2 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44448] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2611 RNA and VGAM2612 RNA respectively, herein schematically represented by VGAM1 RNA and VGAM2 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44449] VGAM2611 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2611 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2611 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2611 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44450] VGAM2612 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2612 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2612 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2612 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44451] It is appreciated that a function of VGR3266 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3266 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3266 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3266 gene: VGAM2611 host target protein and VGAM2612 host target protein,

herein schematically represented by VGAM1 HOST TARGET PROTEIN and VGAM HOST TARGET PROTEIN respectively.

The function of these host target genes is elaborated hereinabove with reference to VGAM2611 and VGAM2612

[44452] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3267(VGR3267) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44453] VGR3267 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3267 gene was detected is described hereinabove with reference to Figs. 6–15.

[44454] VGR3267 gene encodes VGR3267 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44455] VGR3267 precursor RNA folds spatially, forming VGR3267 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3267 folded

precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3267 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[44456] VGR3267 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 6 separate VGAM precursor RNAs, VGAM2614 precursor RNA, VGAM2615 precursor RNA, VGAM2616 precursor RNA, VGAM2617 precursor RNA, VGAM2618 precursor RNA and VGAM2619 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR and VGAM6 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44457] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2614

RNA, VGAM2615 RNA, VGAM2616 RNA, VGAM2617 RNA, VGAM2618 RNA and VGAM2619 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA and VGAM6 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44458] VGAM2614 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2614 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2614 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2614 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44459] VGAM2615 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2615 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2615 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2615 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44460] VGAM2616 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2616 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2616 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2616 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[44461] VGAM2617 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2617 host target RNA, herein schematically represented by VGAM4

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2617 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2617 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[44462] VGAM2618 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2618 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2618 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2618 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[44463] VGAM2619 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2619 host

target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2619 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2619 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[44464] It is appreciated that a function of VGR3267 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3267 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3267 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3267 gene: VGAM2614 host target protein, VGAM2615 host target protein, VGAM2616 host target protein, VGAM2617 host target protein, VGAM2618 host target protein and VGAM2619 host target protein, herein schematically represented by

VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2614, VGAM2615, VGAM2616, VGAM2617, VGAM2618 and VGAM2619

[44465] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3268(VGR3268) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44466] VGR3268 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3268 gene was detected is described hereinabove with reference to Figs. 6-15.

[44467] VGR3268 gene encodes VGR3268 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44468] VGR3268 precursor RNA folds spatially, forming VGR3268 folded precursor RNA, herein designated VGR FOLDED

PRECURSOR RNA. It is appreciated that VGR3268 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3268 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[44469] VGR3268 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate VGAM precursor RNAs, VGAM2620 precursor RNA, VGAM2621 precursor RNA and VGAM2622 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR and VGAM3 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44470] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2620 RNA, VGAM2621 RNA and VGAM2622 RNA respectively,

herein schematically represented by VGAM1 RNA, VGAM2 RNA and VGAM3 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44471] VGAM2620 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2620 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2620 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2620 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44472] VGAM2621 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2621 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2621 host target RNA, herein

schematically represented by VGAM2 HOST TARGET RNA into VGAM2621 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44473] VGAM2622 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2622 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2622 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2622 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[44474] It is appreciated that a function of VGR3268 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3268 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3268 gene, herein designated VGR GENE, correlate with, and

may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3268 gene: VGAM2620 host target protein, VGAM2621 host target protein and VGAM2622 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2620, VGAM2621 and VGAM2622

[44475] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3269(VGR3269) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44476] VGR3269 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3269 gene was detected is described hereinabove with reference to Figs. 6-15.

[44477] VGR3269 gene encodes VGR3269 precursor RNA, herein

designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44478] VGR3269 precursor RNA folds spatially, forming VGR3269 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3269 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3269 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[44479] VGR3269 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate VGAM precursor RNAs, VGAM2623 precursor RNA, VGAM2624 precursor RNA and VGAM2625 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR and VGAM3 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44480] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2623 RNA, VGAM2624 RNA and VGAM2625 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA and VGAM3 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44481] VGAM2623 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2623 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2623 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2623 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44482] VGAM2624 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2624 host target RNA, herein schematically represented by VGAM2

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2624 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2624 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44483] VGAM2625 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2625 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2625 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2625 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[44484] It is appreciated that a function of VGR3269 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attack–

ing a host. Accordingly, utilities of VGR3269 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3269 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3269 gene: VGAM2623 host target protein, VGAM2624 host target protein and VGAM2625 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2623, VGAM2624 and VGAM2625

[44485] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3270(VGR3270) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44486] VGR3270 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding,

RNA viral gene. The method by which VGR3270 gene was detected is described hereinabove with reference to Figs. 6–15.

[44487] VGR3270 gene encodes VGR3270 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44488] VGR3270 precursor RNA folds spatially, forming VGR3270 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3270 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3270 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[44489] VGR3270 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate VGAM precursor RNAs, VGAM2626 precursor RNA, VGAM2627 precursor RNA, VGAM2628 precursor RNA and VGAM2629 precursor RNA, herein schematically represented by

VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR and VGAM4 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44490] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2626 RNA, VGAM2627 RNA, VGAM2628 RNA and VGAM2629 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA and VGAM4 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44491] VGAM2626 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2626 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2626 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2626 host target protein, herein schematically

represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44492] VGAM2627 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2627 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2627 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2627 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44493] VGAM2628 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2628 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2628 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA

into VGAM2628 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[44494] VGAM2629 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2629 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2629 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2629 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[44495] It is appreciated that a function of VGR3270 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3270 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3270 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target

genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3270 gene: VGAM2626 host target protein, VGAM2627 host target protein, VGAM2628 host target protein and VGAM2629 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2626, VGAM2627, VGAM2628 and VGAM2629

[44496] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3271(VGR3271) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44497] VGR3271 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3271 gene was detected is described hereinabove with reference to Figs. 6-15.

[44498] VGR3271 gene encodes VGR3271 precursor RNA, herein

designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44499] VGR3271 precursor RNA folds spatially, forming VGR3271 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3271 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3271 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[44500] VGR3271 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 6 separate VGAM precursor RNAs, VGAM2630 precursor RNA, VGAM2631 precursor RNA, VGAM2632 precursor RNA, VGAM2633 precursor RNA, VGAM2634 precursor RNA and VGAM2635 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR and VGAM6 PRECURSOR respectively, each of which VGAM

precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44501] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2630 RNA, VGAM2631 RNA, VGAM2632 RNA, VGAM2633 RNA, VGAM2634 RNA and VGAM2635 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA and VGAM6 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44502] VGAM2630 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2630 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2630 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2630 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44503] VGAM2631 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2631 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2631 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2631 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44504] VGAM2632 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2632 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2632 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2632 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of

Fig. 1.

[44505] VGAM2633 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2633 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2633 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2633 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[44506] VGAM2634 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2634 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2634 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2634 host target protein, herein schematically

represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[44507] VGAM2635 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2635 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2635 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2635 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[44508] It is appreciated that a function of VGR3271 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3271 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3271 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in

the operon-like cluster of VGR3271 gene: VGAM2630 host target protein, VGAM2631 host target protein, VGAM2632 host target protein, VGAM2633 host target protein, VGAM2634 host target protein and VGAM2635 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2630, VGAM2631, VGAM2632, VGAM2633, VGAM2634 and VGAM2635

[44509] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3272(VGR3272) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44510] VGR3272 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3272 gene was detected is described hereinabove with reference to Figs. 6-15.

- [44511] VGR3272 gene encodes VGR3272 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.
- [44512] VGR3272 precursor RNA folds spatially, forming VGR3272 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3272 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3272 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.
- [44513] VGR3272 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate VGAM precursor RNAs, VGAM2636 precursor RNA and VGAM2637 precursor RNA, herein schematically represented by VGAM1 PRECURSOR and VGAM2 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44514] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2636 RNA and VGAM2637 RNA respectively, herein schematically represented by VGAM1 RNA and VGAM2 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44515] VGAM2636 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2636 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2636 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2636 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44516] VGAM2637 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2637 host target RNA, herein schematically represented by VGAM2

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2637 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2637 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44517] It is appreciated that a function of VGR3272 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3272 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3272 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3272 gene: VGAM2636 host target protein and VGAM2637 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN and VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2636 and VGAM2637

[44518] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3273(VGR3273) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44519] VGR3273 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3273 gene was detected is described hereinabove with reference to Figs. 6–15.

[44520] VGR3273 gene encodes VGR3273 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44521] VGR3273 precursor RNA folds spatially, forming VGR3273 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3273 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3273 precursor

sor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[44522] VGR3273 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 5 separate VGAM precursor RNAs, VGAM2638 precursor RNA, VGAM2639 precursor RNA, VGAM2640 precursor RNA, VGAM2641 precursor RNA and VGAM2642 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR and VGAM5 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44523] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2638 RNA, VGAM2639 RNA, VGAM2640 RNA, VGAM2641 RNA and VGAM2642 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA and VGAM5 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44524] VGAM2638 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2638 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2638 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2638 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44525] VGAM2639 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2639 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2639 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2639 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of

Fig. 1.

[44526] VGAM2640 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2640 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2640 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2640 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[44527] VGAM2641 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2641 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2641 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2641 host target protein, herein schematically

represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[44528] VGAM2642 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2642 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2642 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2642 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[44529] It is appreciated that a function of VGR3273 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3273 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3273 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in

the operon-like cluster of VGR3273 gene: VGAM2638 host target protein, VGAM2639 host target protein, VGAM2640 host target protein, VGAM2641 host target protein and VGAM2642 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2638, VGAM2639, VGAM2640, VGAM2641 and VGAM2642

[44530] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3274(VGR3274) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44531] VGR3274 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3274 gene was detected is described hereinabove with reference to Figs. 6-15.

[44532] VGR3274 gene encodes VGR3274 precursor RNA, herein

designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44533] VGR3274 precursor RNA folds spatially, forming VGR3274 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3274 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3274 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[44534] VGR3274 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 7 separate VGAM precursor RNAs, VGAM2643 precursor RNA, VGAM2644 precursor RNA, VGAM2645 precursor RNA, VGAM2646 precursor RNA, VGAM2647 precursor RNA, VGAM2648 precursor RNA and VGAM2649 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR and VGAM7 PRE-

CURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44535] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2643 RNA, VGAM2644 RNA, VGAM2645 RNA, VGAM2646 RNA, VGAM2647 RNA, VGAM2648 RNA and VGAM2649 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA and VGAM7 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44536] VGAM2643 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2643 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2643 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2643 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of

Fig. 1.

[44537] VGAM2644 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2644 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2644 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2644 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44538] VGAM2645 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2645 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2645 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2645 host target protein, herein schematically

represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[44539] VGAM2646 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2646 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2646 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2646 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[44540] VGAM2647 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2647 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2647 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA

into VGAM2647 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[44541] VGAM2648 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2648 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2648 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2648 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[44542] VGAM2649 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2649 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2649 host target RNA, herein

schematically represented by VGAM7 HOST TARGET RNA into VGAM2649 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[44543] It is appreciated that a function of VGR3274 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3274 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3274 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3274 gene: VGAM2643 host target protein, VGAM2644 host target protein, VGAM2645 host target protein, VGAM2646 host target protein, VGAM2647 host target protein, VGAM2648 host target protein and VGAM2649 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2643, VGAM2644, VGAM2645, VGAM2646, VGAM2647, VGAM2648 and

[44544] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3275(VGR3275) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44545] VGR3275 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3275 gene was detected is described hereinabove with reference to Figs. 6–15.

[44546] VGR3275 gene encodes VGR3275 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44547] VGR3275 precursor RNA folds spatially, forming VGR3275 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3275 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to

the fact that the nucleotide sequence of VGR3275 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[44548] VGR3275 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate VGAM precursor RNAs, VGAM2650 precursor RNA and VGAM2651 precursor RNA, herein schematically represented by VGAM1 PRECURSOR and VGAM2 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44549] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2650 RNA and VGAM2651 RNA respectively, herein schematically represented by VGAM1 RNA and VGAM2 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44550] VGAM2650 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding

site located in an untranslated region of VGAM2650 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2650 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2650 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44551] VGAM2651 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2651 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2651 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2651 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44552] It is appreciated that a function of VGR3275 gene, herein

designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3275 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3275 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3275 gene: VGAM2650 host target protein and VGAM2651 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN and VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2650 and VGAM2651

[44553] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3276(VGR3276) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44554] VGR3276 gene, herein designated VGR GENE, is a novel

bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3276 gene was detected is described hereinabove with reference to Figs. 6–15.

[44555] VGR3276 gene encodes VGR3276 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44556] VGR3276 precursor RNA folds spatially, forming VGR3276 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3276 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3276 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[44557] VGR3276 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate VGAM precursor RNAs, VGAM2652 precursor RNA, VGAM2653 precursor RNA, VGAM2654 precursor RNA and VGAM2655

precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR and VGAM4 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44558] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2652 RNA, VGAM2653 RNA, VGAM2654 RNA and VGAM2655 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA and VGAM4 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44559] VGAM2652 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2652 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2652 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA

into VGAM2652 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44560] VGAM2653 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2653 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2653 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2653 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44561] VGAM2654 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2654 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2654 host target RNA, herein

schematically represented by VGAM3 HOST TARGET RNA into VGAM2654 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[44562] VGAM2655 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2655 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2655 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2655 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[44563] It is appreciated that a function of VGR3276 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3276 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3276 gene, herein designated VGR GENE, correlate with, and

may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3276 gene: VGAM2652 host target protein, VGAM2653 host target protein, VGAM2654 host target protein and VGAM2655 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2652, VGAM2653, VGAM2654 and VGAM2655

[44564] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3277(VGR3277) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44565] VGR3277 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3277 gene was detected is described hereinabove with reference to Figs. 6-15.

[44566] VGR3277 gene encodes VGR3277 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44567] VGR3277 precursor RNA folds spatially, forming VGR3277 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3277 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3277 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[44568] VGR3277 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 8 separate VGAM precursor RNAs, VGAM2656 precursor RNA, VGAM2657 precursor RNA, VGAM2658 precursor RNA, VGAM2659 precursor RNA, VGAM2660 precursor RNA, VGAM2661 precursor RNA, VGAM2662 precursor RNA and VGAM2663 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRE-

CURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR, VGAM7 PRECURSOR and VGAM8 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44569] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2656 RNA, VGAM2657 RNA, VGAM2658 RNA, VGAM2659 RNA, VGAM2660 RNA, VGAM2661 RNA, VGAM2662 RNA and VGAM2663 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA, VGAM7 RNA and VGAM8 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44570] VGAM2656 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2656 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2656 host target RNA, herein

schematically represented by VGAM1 HOST TARGET RNA into VGAM2656 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44571] VGAM2657 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2657 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2657 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2657 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44572] VGAM2658 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2658 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby in-

hibiting translation of VGAM2658 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2658 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[44573] VGAM2659 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2659 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2659 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2659 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[44574] VGAM2660 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2660 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2660 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2660 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[44575] VGAM2661 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2661 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2661 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2661 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[44576] VGAM2662 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2662 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2662 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM2662 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[44577] VGAM2663 RNA, herein schematically represented by VGAM8 binds complementarily to a host target binding site located in an untranslated region of VGAM2663 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2663 host target RNA, herein schematically represented by VGAM8 HOST TARGET RNA into VGAM2663 host target protein, herein schematically represented by VGAM8 HOST TARGET PROTEIN, both of Fig. 1.

[44578] It is appreciated that a function of VGR3277 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3277 gene include

diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3277 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3277 gene: VGAM2656 host target protein, VGAM2657 host target protein, VGAM2658 host target protein, VGAM2659 host target protein, VGAM2660 host target protein, VGAM2661 host target protein, VGAM2662 host target protein and VGAM2663 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2656, VGAM2657, VGAM2658, VGAM2659, VGAM2660, VGAM2661, VGAM2662 and VGAM2663

[44579] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3278(VGR3278) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function

and utility of which at least one host target gene is known in the art.

[44580] VGR3278 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3278 gene was detected is described hereinabove with reference to Figs. 6–15.

[44581] VGR3278 gene encodes VGR3278 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44582] VGR3278 precursor RNA folds spatially, forming VGR3278 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3278 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3278 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[44583] VGR3278 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellu–

lar enzymatic activity into at least 3 separate VGAM precursor RNAs, VGAM2664 precursor RNA, VGAM2665 precursor RNA and VGAM2666 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR and VGAM3 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44584] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2664 RNA, VGAM2665 RNA and VGAM2666 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA and VGAM3 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44585] VGAM2664 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2664 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2664 host target RNA, herein

schematically represented by VGAM1 HOST TARGET RNA into VGAM2664 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44586] VGAM2665 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2665 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2665 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2665 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44587] VGAM2666 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2666 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby in-

hibiting translation of VGAM2666 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2666 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[44588] It is appreciated that a function of VGR3278 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3278 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3278 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3278 gene: VGAM2664 host target protein, VGAM2665 host target protein and VGAM2666 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2664, VGAM2665 and VGAM2666

[44589] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred

to here as Viral Genomic Record 3279(VGR3279) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44590] VGR3279 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3279 gene was detected is described hereinabove with reference to Figs. 6-15.

[44591] VGR3279 gene encodes VGR3279 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44592] VGR3279 precursor RNA folds spatially, forming VGR3279 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3279 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3279 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which

is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[44593] VGR3279 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate VGAM precursor RNAs, VGAM2667 precursor RNA, VGAM2668 precursor RNA, VGAM2669 precursor RNA and VGAM2670 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR and VGAM4 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44594] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2667 RNA, VGAM2668 RNA, VGAM2669 RNA and VGAM2670 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA and VGAM4 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44595] VGAM2667 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding

site located in an untranslated region of VGAM2667 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2667 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2667 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44596] VGAM2668 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2668 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2668 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2668 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44597] VGAM2669 RNA, herein schematically represented by

VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2669 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2669 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2669 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[44598] VGAM2670 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2670 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2670 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2670 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[44599] It is appreciated that a function of VGR3279 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3279 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3279 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3279 gene: VGAM2667 host target protein, VGAM2668 host target protein, VGAM2669 host target protein and VGAM2670 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2667, VGAM2668, VGAM2669 and VGAM2670

[44600] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3280(VGR3280) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function

and utility of which at least one host target gene is known in the art.

[44601] VGR3280 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3280 gene was detected is described hereinabove with reference to Figs. 6–15.

[44602] VGR3280 gene encodes VGR3280 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44603] VGR3280 precursor RNA folds spatially, forming VGR3280 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3280 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3280 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[44604] VGR3280 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellu–

lar enzymatic activity into at least 7 separate VGAM precursor RNAs, VGAM2671 precursor RNA, VGAM2672 precursor RNA, VGAM2673 precursor RNA, VGAM2674 precursor RNA, VGAM2675 precursor RNA, VGAM2676 precursor RNA and VGAM2677 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR and VGAM7 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44605] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2671 RNA, VGAM2672 RNA, VGAM2673 RNA, VGAM2674 RNA, VGAM2675 RNA, VGAM2676 RNA and VGAM2677 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA and VGAM7 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44606] VGAM2671 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2671 host

target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2671 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2671 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44607] VGAM2672 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2672 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2672 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2672 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44608] VGAM2673 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding

site located in an untranslated region of VGAM2673 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2673 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2673 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[44609] VGAM2674 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2674 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2674 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2674 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[44610] VGAM2675 RNA, herein schematically represented by

VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2675 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2675 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2675 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[44611] VGAM2676 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2676 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2676 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2676 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[44612] VGAM2677 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2677 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2677 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM2677 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[44613] It is appreciated that a function of VGR3280 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3280 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3280 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3280 gene: VGAM2671 host target protein, VGAM2672 host target protein,

VGAM2673 host target protein, VGAM2674 host target protein, VGAM2675 host target protein, VGAM2676 host target protein and VGAM2677 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2671, VGAM2672, VGAM2673, VGAM2674, VGAM2675, VGAM2676 and VGAM2677

[44614] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3281(VGR3281) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44615] VGR3281 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3281 gene was detected is described hereinabove with reference to Figs. 6-15.

[44616] VGR3281 gene encodes VGR3281 precursor RNA, herein

designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44617] VGR3281 precursor RNA folds spatially, forming VGR3281 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3281 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3281 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[44618] VGR3281 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 6 separate VGAM precursor RNAs, VGAM2678 precursor RNA, VGAM2679 precursor RNA, VGAM2680 precursor RNA, VGAM2681 precursor RNA, VGAM2682 precursor RNA and VGAM2683 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR and VGAM6 PRECURSOR respectively, each of which VGAM

precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44619] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2678 RNA, VGAM2679 RNA, VGAM2680 RNA, VGAM2681 RNA, VGAM2682 RNA and VGAM2683 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA and VGAM6 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44620] VGAM2678 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2678 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2678 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2678 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44621] VGAM2679 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2679 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2679 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2679 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44622] VGAM2680 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2680 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2680 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2680 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of

Fig. 1.

[44623] VGAM2681 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2681 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2681 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2681 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[44624] VGAM2682 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2682 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2682 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2682 host target protein, herein schematically

represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[44625] VGAM2683 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2683 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2683 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2683 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[44626] It is appreciated that a function of VGR3281 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3281 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3281 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in

the operon-like cluster of VGR3281 gene: VGAM2678 host target protein, VGAM2679 host target protein, VGAM2680 host target protein, VGAM2681 host target protein, VGAM2682 host target protein and VGAM2683 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2678, VGAM2679, VGAM2680, VGAM2681, VGAM2682 and VGAM2683

[44627] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3282(VGR3282) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44628] VGR3282 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3282 gene was detected is described hereinabove with reference to Figs. 6-15.

[44629] VGR3282 gene encodes VGR3282 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44630] VGR3282 precursor RNA folds spatially, forming VGR3282 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3282 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3282 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[44631] VGR3282 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate VGAM precursor RNAs, VGAM2684 precursor RNA, VGAM2685 precursor RNA and VGAM2686 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR and VGAM3 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig.

8.

[44632] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2684 RNA, VGAM2685 RNA and VGAM2686 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA and VGAM3 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44633] VGAM2684 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2684 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2684 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2684 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44634] VGAM2685 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2685 host

target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2685 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2685 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44635] VGAM2686 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2686 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2686 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2686 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[44636] It is appreciated that a function of VGR3282 gene, herein designated VGR GENE, is inhibition of expression of host

target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3282 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3282 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3282 gene: VGAM2684 host target protein, VGAM2685 host target protein and VGAM2686 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2684, VGAM2685 and VGAM2686

[44637] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3283(VGR3283) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44638] VGR3283 gene, herein designated VGR GENE, is a novel

bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3283 gene was detected is described hereinabove with reference to Figs. 6–15.

[44639] VGR3283 gene encodes VGR3283 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44640] VGR3283 precursor RNA folds spatially, forming VGR3283 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3283 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3283 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[44641] VGR3283 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate VGAM precursor RNAs, VGAM2687 precursor RNA, VGAM2688 precursor RNA and VGAM2689 precursor RNA, herein

schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR and VGAM3 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44642] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2687 RNA, VGAM2688 RNA and VGAM2689 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA and VGAM3 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44643] VGAM2687 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2687 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2687 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2687 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of

Fig. 1.

[44644] VGAM2688 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2688 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2688 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2688 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44645] VGAM2689 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2689 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2689 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2689 host target protein, herein schematically

represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[44646] It is appreciated that a function of VGR3283 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3283 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3283 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3283 gene: VGAM2687 host target protein, VGAM2688 host target protein and VGAM2689 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2687, VGAM2688 and VGAM2689

[44647] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3284(VGR3284) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates

expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44648] VGR3284 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3284 gene was detected is described hereinabove with reference to Figs. 6–15.

[44649] VGR3284 gene encodes VGR3284 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44650] VGR3284 precursor RNA folds spatially, forming VGR3284 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3284 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3284 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[44651] VGR3284 folded precursor RNA, herein designated VGR

FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 5 separate VGAM precursor RNAs, VGAM2690 precursor RNA, VGAM2691 precursor RNA, VGAM2692 precursor RNA, VGAM2693 precursor RNA and VGAM2694 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR and VGAM5 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44652] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2690 RNA, VGAM2691 RNA, VGAM2692 RNA, VGAM2693 RNA and VGAM2694 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA and VGAM5 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44653] VGAM2690 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2690 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2690 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2690 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44654] VGAM2691 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2691 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2691 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2691 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44655] VGAM2692 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2692 host target RNA, herein schematically represented by VGAM3

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2692 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2692 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[44656] VGAM2693 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2693 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2693 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2693 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[44657] VGAM2694 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2694 host

target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2694 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2694 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[44658] It is appreciated that a function of VGR3284 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3284 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3284 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3284 gene: VGAM2690 host target protein, VGAM2691 host target protein, VGAM2692 host target protein, VGAM2693 host target protein and VGAM2694 host target protein, herein schematically represented by VGAM1 HOST TARGET PRO-

TEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2690, VGAM2691, VGAM2692, VGAM2693 and VGAM2694

[44659] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3285(VGR3285) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44660] VGR3285 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3285 gene was detected is described hereinabove with reference to Figs. 6–15.

[44661] VGR3285 gene encodes VGR3285 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44662] VGR3285 precursor RNA folds spatially, forming VGR3285 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3285 folded

precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3285 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[44663] VGR3285 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate VGAM precursor RNAs, VGAM2696 precursor RNA, VGAM2697 precursor RNA, VGAM2698 precursor RNA and VGAM2699 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR and VGAM4 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44664] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2696 RNA, VGAM2697 RNA, VGAM2698 RNA and VGAM2699

RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA and VGAM4 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44665] VGAM2696 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2696 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2696 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2696 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44666] VGAM2697 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2697 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby in-

hibiting translation of VGAM2697 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2697 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44667] VGAM2698 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2698 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2698 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2698 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[44668] VGAM2699 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2699 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2699 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2699 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[44669] It is appreciated that a function of VGR3285 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3285 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3285 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3285 gene: VGAM2696 host target protein, VGAM2697 host target protein, VGAM2698 host target protein and VGAM2699 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2696, VGAM2697, VGAM2698 and VGAM2699

[44670] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3286(VGR3286) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44671] VGR3286 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3286 gene was detected is described hereinabove with reference to Figs. 6–15.

[44672] VGR3286 gene encodes VGR3286 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44673] VGR3286 precursor RNA folds spatially, forming VGR3286 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3286 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3286 precu-

sor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[44674] VGR3286 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate VGAM precursor RNAs, VGAM2700 precursor RNA, VGAM2701 precursor RNA and VGAM2702 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR and VGAM3 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44675] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2700 RNA, VGAM2701 RNA and VGAM2702 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA and VGAM3 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44676] VGAM2700 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding

site located in an untranslated region of VGAM2700 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2700 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2700 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44677] VGAM2701 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2701 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2701 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2701 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44678] VGAM2702 RNA, herein schematically represented by

VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2702 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2702 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2702 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[44679] It is appreciated that a function of VGR3286 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3286 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3286 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3286 gene: VGAM2700 host target protein, VGAM2701 host target protein and VGAM2702 host target protein, herein schematically rep-

resented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2700, VGAM2701 and VGAM2702

[44680] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3287(VGR3287) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44681] VGR3287 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3287 gene was detected is described hereinabove with reference to Figs. 6–15.

[44682] VGR3287 gene encodes VGR3287 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44683] VGR3287 precursor RNA folds spatially, forming VGR3287 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3287 folded

precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3287 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[44684] VGR3287 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate VGAM precursor RNAs, VGAM2703 precursor RNA and VGAM2704 precursor RNA, herein schematically represented by VGAM1 PRECURSOR and VGAM2 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44685] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2703 RNA and VGAM2704 RNA respectively, herein schematically represented by VGAM1 RNA and VGAM2 RNA respectively, each of which VGAM RNAs corresponding to VGAM

RNA of Fig. 8.

[44686] VGAM2703 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2703 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2703 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2703 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44687] VGAM2704 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2704 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2704 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2704 host target protein, herein schematically

represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44688] It is appreciated that a function of VGR3287 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3287 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3287 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3287 gene: VGAM2703 host target protein and VGAM2704 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN and VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2703 and VGAM2704

[44689] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3288(VGR3288) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function

and utility of which at least one host target gene is known in the art.

[44690] VGR3288 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3288 gene was detected is described hereinabove with reference to Figs. 6–15.

[44691] VGR3288 gene encodes VGR3288 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44692] VGR3288 precursor RNA folds spatially, forming VGR3288 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3288 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3288 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[44693] VGR3288 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellu–

lar enzymatic activity into at least 2 separate VGAM precursor RNAs, VGAM2706 precursor RNA and VGAM2707 precursor RNA, herein schematically represented by VGAM1 PRECURSOR and VGAM2 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44694] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2706 RNA and VGAM2707 RNA respectively, herein schematically represented by VGAM1 RNA and VGAM2 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44695] VGAM2706 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2706 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2706 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA

into VGAM2706 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44696] VGAM2707 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2707 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2707 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2707 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44697] It is appreciated that a function of VGR3288 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3288 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3288 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target

genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3288 gene: VGAM2706 host target protein and VGAM2707 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN and VGAM HOST TARGET PROTEIN respectively.

The function of these host target genes is elaborated hereinabove with reference to VGAM2706 and VGAM2707

[44698] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3289(VGR3289) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44699] VGR3289 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3289 gene was detected is described hereinabove with reference to Figs. 6-15.

[44700] VGR3289 gene encodes VGR3289 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44701] VGR3289 precursor RNA folds spatially, forming VGR3289 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3289 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3289 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[44702] VGR3289 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate VGAM precursor RNAs, VGAM2708 precursor RNA and VGAM2709 precursor RNA, herein schematically represented by VGAM1 PRECURSOR and VGAM2 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44703] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2708

RNA and VGAM2709 RNA respectively, herein schematically represented by VGAM1 RNA and VGAM2 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44704] VGAM2708 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2708 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2708 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2708 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44705] VGAM2709 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2709 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby in-

hibiting translation of VGAM2709 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2709 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

- [44706] It is appreciated that a function of VGR3289 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3289 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3289 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3289 gene: VGAM2708 host target protein and VGAM2709 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN and VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2708 and VGAM2709
- [44707] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3290(VGR3290) viral

gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44708] VGR3290 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3290 gene was detected is described hereinabove with reference to Figs. 6–15.

[44709] VGR3290 gene encodes VGR3290 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44710] VGR3290 precursor RNA folds spatially, forming VGR3290 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3290 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3290 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the

second half thereof, as is well known in the art.

[44711] VGR3290 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate VGAM precursor RNAs, VGAM2711 precursor RNA and VGAM2712 precursor RNA, herein schematically represented by VGAM1 PRECURSOR and VGAM2 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44712] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2711 RNA and VGAM2712 RNA respectively, herein schematically represented by VGAM1 RNA and VGAM2 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44713] VGAM2711 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2711 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE

I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2711 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2711 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44714] VGAM2712 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2712 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2712 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2712 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44715] It is appreciated that a function of VGR3290 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3290 gene include diagnosis, prevention and treatment of viral infection by .

Specific functions, and accordingly utilities, of VGR3290 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3290 gene: VGAM2711 host target protein and VGAM2712 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN and VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2711 and VGAM2712

[44716] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3291(VGR3291) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44717] VGR3291 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3291 gene was detected is described hereinabove with reference to Figs. 6–15.

[44718] VGR3291 gene encodes VGR3291 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44719] VGR3291 precursor RNA folds spatially, forming VGR3291 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3291 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3291 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[44720] VGR3291 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate VGAM precursor RNAs, VGAM2713 precursor RNA, VGAM2714 precursor RNA and VGAM2715 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR and VGAM3 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig.

8.

[44721] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2713 RNA, VGAM2714 RNA and VGAM2715 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA and VGAM3 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44722] VGAM2713 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2713 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2713 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2713 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44723] VGAM2714 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2714 host

target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2714 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2714 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44724] VGAM2715 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2715 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2715 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2715 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[44725] It is appreciated that a function of VGR3291 gene, herein designated VGR GENE, is inhibition of expression of host

target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3291 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3291 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3291 gene: VGAM2713 host target protein, VGAM2714 host target protein and VGAM2715 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2713, VGAM2714 and VGAM2715

[44726] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3292(VGR3292) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44727] VGR3292 gene, herein designated VGR GENE, is a novel

bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3292 gene was detected is described hereinabove with reference to Figs. 6–15.

[44728] VGR3292 gene encodes VGR3292 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44729] VGR3292 precursor RNA folds spatially, forming VGR3292 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3292 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3292 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[44730] VGR3292 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate VGAM precursor RNAs, VGAM2717 precursor RNA and VGAM2718 precursor RNA, herein schematically represented by

VGAM1 PRECURSOR and VGAM2 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44731] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2717 RNA and VGAM2718 RNA respectively, herein schematically represented by VGAM1 RNA and VGAM2 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44732] VGAM2717 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2717 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2717 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2717 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44733] VGAM2718 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2718 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2718 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2718 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44734] It is appreciated that a function of VGR3292 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3292 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3292 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3292 gene: VGAM2717 host target protein and VGAM2718 host target protein,

herein schematically represented by VGAM1 HOST TARGET PROTEIN and VGAM HOST TARGET PROTEIN respectively.

The function of these host target genes is elaborated hereinabove with reference to VGAM2717 and VGAM2718

[44735] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3293(VGR3293) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44736] VGR3293 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3293 gene was detected is described hereinabove with reference to Figs. 6–15.

[44737] VGR3293 gene encodes VGR3293 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44738] VGR3293 precursor RNA folds spatially, forming VGR3293 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3293 folded

precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3293 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[44739] VGR3293 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 7 separate VGAM precursor RNAs, VGAM2719 precursor RNA, VGAM2720 precursor RNA, VGAM2721 precursor RNA, VGAM2722 precursor RNA, VGAM2723 precursor RNA, VGAM2724 precursor RNA and VGAM2725 precursor RNA, herein schematically represented by VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR, VGAM6 PRECURSOR and VGAM7 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44740] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA

segments of about 22 nucleotides in length, VGAM2719 RNA, VGAM2720 RNA, VGAM2721 RNA, VGAM2722 RNA, VGAM2723 RNA, VGAM2724 RNA and VGAM2725 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA, VGAM6 RNA and VGAM7 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44741] VGAM2719 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2719 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2719 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2719 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44742] VGAM2720 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2720 host target RNA, herein schematically represented by VGAM2

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2720 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2720 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44743] VGAM2721 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2721 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2721 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA into VGAM2721 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[44744] VGAM2722 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2722 host

target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2722 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2722 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[44745] VGAM2723 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2723 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2723 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2723 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[44746] VGAM2724 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding

site located in an untranslated region of VGAM2724 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2724 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2724 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[44747] VGAM2725 RNA, herein schematically represented by VGAM7 binds complementarily to a host target binding site located in an untranslated region of VGAM2725 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2725 host target RNA, herein schematically represented by VGAM7 HOST TARGET RNA into VGAM2725 host target protein, herein schematically represented by VGAM7 HOST TARGET PROTEIN, both of Fig. 1.

[44748] It is appreciated that a function of VGR3293 gene, herein

designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3293 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3293 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3293 gene: VGAM2719 host target protein, VGAM2720 host target protein, VGAM2721 host target protein, VGAM2722 host target protein, VGAM2723 host target protein, VGAM2724 host target protein and VGAM2725 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2719, VGAM2720, VGAM2721, VGAM2722, VGAM2723, VGAM2724 and VGAM2725

[44749] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3294(VGR3294) viral gene, which encodes an operon-like cluster of novel viral

micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44750] VGR3294 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3294 gene was detected is described hereinabove with reference to Figs. 6–15.

[44751] VGR3294 gene encodes VGR3294 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44752] VGR3294 precursor RNA folds spatially, forming VGR3294 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3294 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3294 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[44753] VGR3294 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate VGAM precursor RNAs, VGAM2726 precursor RNA and VGAM2727 precursor RNA, herein schematically represented by VGAM1 PRECURSOR and VGAM2 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44754] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2726 RNA and VGAM2727 RNA respectively, herein schematically represented by VGAM1 RNA and VGAM2 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44755] VGAM2726 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2726 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby in-

hibiting translation of VGAM2726 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2726 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44756] VGAM2727 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2727 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2727 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2727 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44757] It is appreciated that a function of VGR3294 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3294 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3294

gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3294 gene: VGAM2726 host target protein and VGAM2727 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN and VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2726 and VGAM2727

[44758] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3295(VGR3295) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44759] VGR3295 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3295 gene was detected is described hereinabove with reference to Figs. 6-15.

[44760] VGR3295 gene encodes VGR3295 precursor RNA, herein

designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44761] VGR3295 precursor RNA folds spatially, forming VGR3295 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3295 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3295 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[44762] VGR3295 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate VGAM precursor RNAs, VGAM2728 precursor RNA and VGAM2729 precursor RNA, herein schematically represented by VGAM1 PRECURSOR and VGAM2 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44763] The above mentioned VGAM precursor RNAs are diced by

DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2728 RNA and VGAM2729 RNA respectively, herein schematically represented by VGAM1 RNA and VGAM2 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44764] VGAM2728 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2728 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2728 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2728 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44765] VGAM2729 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2729 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corre-

sponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2729 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2729 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44766] It is appreciated that a function of VGR3295 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3295 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3295 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3295 gene: VGAM2728 host target protein and VGAM2729 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN and VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2728 and VGAM2729

[44767] Fig. 9 further provides a conceptual description of novel

bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3296(VGR3296) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44768] VGR3296 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3296 gene was detected is described hereinabove with reference to Figs. 6–15.

[44769] VGR3296 gene encodes VGR3296 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44770] VGR3296 precursor RNA folds spatially, forming VGR3296 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3296 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3296 precursor RNA comprises a plurality of segments, the first half

of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

[44771] VGR3296 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate VGAM precursor RNAs, VGAM2730 precursor RNA and VGAM2731 precursor RNA, herein schematically represented by VGAM1 PRECURSOR and VGAM2 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44772] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2730 RNA and VGAM2731 RNA respectively, herein schematically represented by VGAM1 RNA and VGAM2 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44773] VGAM2730 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2730 host target RNA, herein schematically represented by VGAM1

HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2730 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA into VGAM2730 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44774] VGAM2731 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2731 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2731 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2731 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44775] It is appreciated that a function of VGR3296 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attack–

ing a host. Accordingly, utilities of VGR3296 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3296 gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3296 gene: VGAM2730 host target protein and VGAM2731 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN and VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2730 and VGAM2731

[44776] Fig. 9 further provides a conceptual description of novel bioinformatically detected regulatory viral gene, referred to here as Viral Genomic Record 3297(VGR3297) viral gene, which encodes an operon-like cluster of novel viral micro RNA-like genes, each of which in turn modulates expression of at least one host target gene, the function and utility of which at least one host target gene is known in the art.

[44777] VGR3297 gene, herein designated VGR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA viral gene. The method by which VGR3297 gene was

detected is described hereinabove with reference to Figs. 6–15.

[44778] VGR3297 gene encodes VGR3297 precursor RNA, herein designated VGR PRECURSOR RNA, an RNA molecule, typically several hundred nucleotides long.

[44779] VGR3297 precursor RNA folds spatially, forming VGR3297 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA. It is appreciated that VGR3297 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, comprises a plurality of what is known in the art as hairpin structures. These hairpin structures are due to the fact that the nucleotide sequence of VGR3297 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed–reversed sequence of the second half thereof, as is well known in the art.

[44780] VGR3297 folded precursor RNA, herein designated VGR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 6 separate VGAM precursor RNAs, VGAM2733 precursor RNA, VGAM2734 precursor RNA, VGAM2735 precursor RNA, VGAM2736 precursor RNA, VGAM2737 precursor RNA and VGAM2738 precursor RNA, herein schematically represented by

VGAM1 PRECURSOR, VGAM2 PRECURSOR, VGAM3 PRECURSOR, VGAM4 PRECURSOR, VGAM5 PRECURSOR and VGAM6 PRECURSOR respectively, each of which VGAM precursor RNAs being a hairpin shaped RNA segment, corresponding to VGAM PRECURSOR RNA of Fig. 8.

[44781] The above mentioned VGAM precursor RNAs are diced by DICER COMPLEX of Fig. 8, yielding respective short RNA segments of about 22 nucleotides in length, VGAM2733 RNA, VGAM2734 RNA, VGAM2735 RNA, VGAM2736 RNA, VGAM2737 RNA and VGAM2738 RNA respectively, herein schematically represented by VGAM1 RNA, VGAM2 RNA, VGAM3 RNA, VGAM4 RNA, VGAM5 RNA and VGAM6 RNA respectively, each of which VGAM RNAs corresponding to VGAM RNA of Fig. 8.

[44782] VGAM2733 RNA, herein schematically represented by VGAM1 binds complementarily to a host target binding site located in an untranslated region of VGAM2733 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2733 host target RNA, herein schematically represented by VGAM1 HOST TARGET RNA

into VGAM2733 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN, both of Fig. 1.

[44783] VGAM2734 RNA, herein schematically represented by VGAM2 binds complementarily to a host target binding site located in an untranslated region of VGAM2734 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2734 host target RNA, herein schematically represented by VGAM2 HOST TARGET RNA into VGAM2734 host target protein, herein schematically represented by VGAM2 HOST TARGET PROTEIN, both of Fig. 1.

[44784] VGAM2735 RNA, herein schematically represented by VGAM3 binds complementarily to a host target binding site located in an untranslated region of VGAM2735 host target RNA, herein schematically represented by VGAM3 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2735 host target RNA, herein

schematically represented by VGAM3 HOST TARGET RNA into VGAM2735 host target protein, herein schematically represented by VGAM3 HOST TARGET PROTEIN, both of Fig. 1.

[44785] VGAM2736 RNA, herein schematically represented by VGAM4 binds complementarily to a host target binding site located in an untranslated region of VGAM2736 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2736 host target RNA, herein schematically represented by VGAM4 HOST TARGET RNA into VGAM2736 host target protein, herein schematically represented by VGAM4 HOST TARGET PROTEIN, both of Fig. 1.

[44786] VGAM2737 RNA, herein schematically represented by VGAM5 binds complementarily to a host target binding site located in an untranslated region of VGAM2737 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby in-

hibiting translation of VGAM2737 host target RNA, herein schematically represented by VGAM5 HOST TARGET RNA into VGAM2737 host target protein, herein schematically represented by VGAM5 HOST TARGET PROTEIN, both of Fig. 1.

[44787] VGAM2738 RNA, herein schematically represented by VGAM6 binds complementarily to a host target binding site located in an untranslated region of VGAM2738 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA, which host target binding site corresponds to a host target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 1, thereby inhibiting translation of VGAM2738 host target RNA, herein schematically represented by VGAM6 HOST TARGET RNA into VGAM2738 host target protein, herein schematically represented by VGAM6 HOST TARGET PROTEIN, both of Fig. 1.

[44788] It is appreciated that a function of VGR3297 gene, herein designated VGR GENE, is inhibition of expression of host target genes, as part of a novel viral mechanism of attacking a host. Accordingly, utilities of VGR3297 gene include diagnosis, prevention and treatment of viral infection by . Specific functions, and accordingly utilities, of VGR3297

gene, herein designated VGR GENE, correlate with, and may be deduced from, the identity of the host target genes, which are inhibited by VGAM RNAs comprised in the operon-like cluster of VGR3297 gene: VGAM2733 host target protein, VGAM2734 host target protein, VGAM2735 host target protein, VGAM2736 host target protein, VGAM2737 host target protein and VGAM2738 host target protein, herein schematically represented by VGAM1 HOST TARGET PROTEIN through VGAM HOST TARGET PROTEIN respectively. The function of these host target genes is elaborated hereinabove with reference to VGAM2733, VGAM2734, VGAM2735, VGAM2736, VGAM2737 and VGAM2738

[44789] BIBLIOGRAPHY

[44790] It is appreciated by persons skilled in the art that the present invention is not limited by what has been particularly shown and described hereinabove. Rather the scope of the present invention includes both combinations and subcombinations of the various features described hereinabove as well as variations and modifications which would occur to persons skilled in the art upon reading the specifications and which are not in the prior art.

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